

HISTORICAL LINGUISTICS
AND
INDO-ARYAN LANGUAGES

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UNIVERSITY OF BOMBAY
WILSON PHILOLOGICAL LECTURES

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FOREWORD

The Wilson Philological Lectures were founded in the University of Bombay to commemorate the pioneering services of Rev. Dr. John Wilson to the field of the study of languages and was inaugurated by Dr. Ramakrishna Gopal Bhandarkar, the doyen of Sanskritists in India in the year 1877. The lectures were delivered annually by an eminent scholar of languages and linguistics invited for that purpose by the Syndicate of the University. The lectures contained in the present volume were delivered by Dr. A. M. Ghatage who was the Wilson Philological Lecturer of the year 1957-58.

There is no arrangement under the Endowment for the publication of these lectures. They have been published by the University in the past from time to time. With the establishment of the Publications Section of the University a couple of years ago, the Syndicate have now decided to publish these lectures as regularly as possible and the present publication has been the first to be undertaken by the University since that decision was arrived at on the recommendation of the Publication Board.

Dr. A. M. Ghatage, who is at present Professor of Linguistics in the University of Poona, was Professor of the Deccan College Post-Graduate and Research Institute when he delivered these lectures. It is perhaps not without interest to note that twenty years ago, another scholar of the same institution, who has been since its inception the Director of the Institute had delivered lectures under this Endowment. Dr. S. M. Katre's lectures (1940-41) were published by the University in 1944; a work now mostly out of print.

Dr. Katre had spoken on *Some Problems of Historical Linguistics in Indo-Aryan*. He had then expressed the hope that the University of Bombay, "which was first in recognizing the value of linguistic studies" will "continue to take a leading part in the development of this science....." The University map of Western India has changed a great deal since then and it is indeed a matter of great satisfaction to find that the pioneering efforts of the University of Bombay have been amply rewarded by the place accorded to the study of linguistics in the different Universities which have been founded in the area which then came under the territorial jurisdiction of the Bombay University. It is also a matter of legitimate pride for us that the Deccan College Post-Graduate and Research Institute has rapidly developed since then and is now generally recognized as an important national centre of

linguistic studies and is seeking to promote these through well-organised and ably guided efforts in different parts of the country.

Dr. Ghatage has returned to the same theme, as is evident from the title of these lectures *Historical Linguistics and Indo-Aryan Languages*, after the lapse of twenty years since the lectures of Dr. Katre were delivered ; and has, as will be seen, carried the treatment further by an assessment of the nature of the comparative method and introducing a discussion of the Indo-Iranian languages for that purpose. A wealth of analytical and critical material pertaining to historical linguistics comes in here for a scholarly survey and the treatment of Indo-Aryan languages has been rounded up by a discussion of the new or the living languages of the family.

It is not for me to say anything about the contents of this work which I am in no way competent to judge. The author is an acknowledged authority in the field and his erudition, insight and understanding are widely recognized and respected. We, therefore, feel confident that this effort of the University will prove worthy of our traditions through its reception in the world of scholarship and will be a source of encouragement to us in the times to come.

March, 1962

G. D. PARIKH

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PREFACE

These Wilson Philological Lectures dealing with Sanskrit and languages derived from it were conceived as a résumé of the present position of historical linguistics and of the history of Indo-Aryan Languages against this background. This will explain to some extent the amount of theoretical discussion included in them. The major facts of the development of Indo-Aryan languages are well-known and easily available in standard works. Additions to this field can only pertain to minor and minute details which are not suitable for presentation in lecture form. Hence a few problems from the different stages of Indo-Aryan were selected for application of the newer methods in historical linguistics. Though well-known facts from the field have been used for this purpose, a discerning reader will find a fair amount of new facts and personal views not known earlier.

It is my pleasant duty to express my sincere thanks to the authorities of the Bombay University for inviting me to deliver these lectures. Special thanks are due to Professor G. D. Parikh, Rector, University of Bombay for taking personal interest in them and making their speedy publication possible. I must also express my thanks to Dr. S. M. Katre, Director, Deccan College, Poona for constant encouragement and help and my colleagues in the Department of Linguistics for suggestions and criticisms. A word of appreciation must also be added for the efficiency and courtesy shown by the Bombay University Press in doing their part of the work.

Deccan College
Poona 6
January 25, 1962

A. M. GHATAGE

I

SCIENTIFIC NATURE OF HISTORICAL LINGUISTICS

AT the beginning of the 20th century, historical linguistics stood at a critical point in its development. The earlier linguists had given it an importance and a value which was primarily based on the denial of any value and importance to the other possible approach to the study of language, namely, a descriptive analysis of the system of language, at a given time. Thus H. PAUL made the categorical statement that there is no other scientific consideration of language other than the historical one. This view is based on a confusion between the descriptive analysis of a language on the one hand and the practical and prescriptive grammar on the other. While the practical grammar of a language aims at a quick and good mastery of it, the normative grammar tries to regulate it for literary and artistic purposes. But a purely descriptive grammar aims at revealing the structure of a language-system at a given time and place and is as scientific in its aims and methods as any other. A rule which lays down that one gets the strong base of the present and future active participles in Sanskrit by dropping the final *i* of the 3 p. plu. present and future active forms of verbs (*bhāvanti* = *bhāvant*; *bhaviṣyānti* = *bhaviṣyānt*; *jūhvati* = *jūhvat*; *hoṣyānti* = *hoṣyānt*) is of a practical nature and of mnemonic value. That *ṛte* 'without' should be used with the ablative of a word and not with the accusative is a normative rule, calculated to ensure a purer expression (Pāṇini 2.3.49), while a rule that the same word should not be used twice in close succession is meant to ensure a good style of writing (Vāmana). But to analyse Sanskrit forms like *bhāvati*: *bhāvanti*; *bhāvatu*: *bhāvantu*; *sunóti*: *sunvānti*; *sunótu*: *sunvāntu* into morphemes with a plural morpheme as (*n~an*) is a descriptive statement of a scientific type, which may or may not have a practical value and is in no sense normative. If at all, such an analysis is more complicated and separates the number and person morphemes in the Sanskrit verbal system, while in most other forms a *cumulative* of these two categories is the rule. It follows out of a consistent application of the basic definition of what a morpheme is in the system of a language.

PAUL's position arises out of another consideration. In agreement with the general views of his times, he thought that a scientific study concerned itself with a causal explanation of facts, and in case of languages no causation other than their historical evolution was

imaginable. As BLOOMFIELD pointed out much later, the reason why a particular expression means a particular thing in a given language is simply the fact that the earlier generations of the speakers of that language did so and later generations simply imitated them in this regard. If the speaker of a New Indo-Aryan language calls his brother 'bhāi' or 'bhāu', it is so because the speaker of the Middle Indo-Aryan used a similar expression for the same purpose, and still earlier the speaker of the Old Indo-Aryan used the word 'bhrātar' to mean the same thing, and so on as far back as we can go, viz. I.E.* *bhrātēr*. The explanation of the linguistic facts then were to be sought in the historical development of these facts and a scientific study of language thus meant the study of its development and change in course of time.

This attitude towards linguistics continued even after DE SAUSSURE pointed out the scientific nature of the synchronic study of language with great emphasis. The great Austrian linguist HUGO SCHUCHARDT remarks in his review of DE SAUSSURE's work: "What does the synchronic linguistics offer us over and above what is given in the normative school-grammar? To this I add one more question: Is there anything other than the history of language which can be called scientific? I answer, not with a dozen different names as one is accustomed to do, but with a single word: linguistic psychology." One can also add to it something like general phonetics, etc. but what is important is to note that for SCHUCHARDT all these do not form part of linguistics proper and there is no other scientific linguistics than the historical study. As pointed out by MEILLET, facts of language, which cannot be explained on the basis of the human nature in general, must be explained on the basis of their historical development.

It was left to DE SAUSSURE not only to emphasise the scientific nature of the descriptive or synchronic analysis, but to go a step further and try to prove that historical linguistics cannot be a scientific discipline. He based his views on the fact that the science of a subject is concerned with the study of general facts which form a system and not on isolated individual facts. In the field of linguistics, this meant a sharp distinction between the system of a language which is common to the whole linguistic community, called by him 'langue', and the individual concrete facts, the actual utterances of particular individuals called by him 'parole'. The science of language can have concern with the first and not the second. What is meant by the French language is the system of signs which is common to all the speakers of French and not the actual utterances of Frenchmen which are individual to each speaker and may show differences among themselves. The fact that a given language is an open system and not a limited

corpus of whatever extent can be explained only on the basis of a distinction drawn between the underlying system and its actual realisation in speech. The judgment that something is correct French or not has a reference to this basic system and not to the fact that a particular utterance occurs or not, for both correct and incorrect utterances *do* occur. Now a system draws its value from the relations which exist among its parts and hence the scientific study of a language as system can only be of a synchronic type.

Against the background of a scientific study of this nature, the facts of linguistic change do not qualify themselves for such a treatment. Linguistic changes, be they phonetic or grammatical, primarily arise in the 'speech', and in the utterance of an individual and then spread to others, to be ultimately incorporated in the system of the language. By the time they are incorporated in the system of a language they cease to be changed and are parts of the synchronic system like others which may have undergone no change. Hence there can be no scientific study of linguistic change and consequently of historical linguistics. Moreover, we cannot perceive change directly or take hold of it in a concrete form. What we normally do is to study the system of a language at an earlier stage and also at a later stage and infer changes which are revealed by a comparison of these two synchronic descriptions. Thus the synchronic study of language is both primary and basic for knowing the history of a language.

The most important aspect of diachronic linguistics is sound-change and DE SAUSSURE insists that sound changes are individual and not general in nature. If all the words which showed in the Old Indo-Aryan a sound like *ṣ*, show instead *s* in the Middle Indo-Aryan, this change is not general in any sense, because the one entity *ṣ*, wherever it occurred has changed into *s*, which is an individual fact. Nor can these changes be systematic, because the value of one change does not depend upon another and all of them do not form a system. Moreover, a given system does not change by itself and only external changes may induce a change in it, as a secondary result.

A. MEILLET attempted a kind of synthesis of these conflicting views and gave a precise and comprehensive picture of the comparative method as practised in historical linguistics. He laid the greatest emphasis on the social character of language and its systematic nature. A linguistic system possesses both a general and a particular nature which can be distinguished but never separated from each other. Instead of opposing a descriptive grammar to a historical one, he insists on the fact that there is only a single grammatical discipline which is devoted

to the positive study of a particular language. This grammar can be done in two ways : it is either descriptive which limits itself to the exposition of the linguistic usages of a given group of people at a given time and in a given place ; or it is historical which explains these changes in the usage between two more or less distinct periods.

The unity of grammar, in spite of the different approaches and different aims, lies in two facts of prime importance. The material studied by either the descriptive or the historical grammar is neither purely synchronic nor purely diachronic. Every description is in some measure historical ; however compact the social group in which a language is spoken, the various speakers who compose it are in certain respects at different degrees of evolution which every language constantly undergoes. The speech of the old men differs from that of the younger people. Both archaic elements and recent innovations are found side by side. Some features are becoming rarer and rarer, while others are gaining in frequency. It is inevitable that a spoken language, for that very reason, can never be in a state of perfect stability.

On the other hand, a historical description cannot follow in a continuous manner the curve of the evolution of a language. Linguistic change has to be grasped indirectly by juxtaposing descriptive statements of a number of successive periods and by establishing a correspondence between the facts of one stage with those of the other. Moreover, it is rarely possible to get the two stages of a language spoken in exactly the same place and among the descendants of the people who constituted the group speaking the language considered for the first period. Thus grammar is descriptive and historical at the same time, and differs only in its emphasis on the one or the other side of the facts, following the special aim of the research undertaken.

The second point he makes out is : whether the study is descriptive or historical, its object is only the particular facts of the language. These are the positive facts given to the linguist. Whether we consider them at a given time and place or whether we follow their development in different places and times, they remain the particular facts of the language, and both the studies are equally scientific. The results which can follow these studies will also be conclusions of a particular nature.

Language is, above all, a social institution and has both the particular and the general aspects, giving rise to both particular and general conclusions. The general principles which underlie languages

may be the principles of acoustics, anatomy and physiology in so far as it is a question of the emission and audition of speech sounds ; of psychology in so far as it concerns the perception of speech and of sociology in so far as it is a question of the action of individual speeches upon each other and the adaptation of languages for the purpose of communication between men. But these are principles with a character of necessity and are at most marginal and auxiliary to the general principles of linguistics proper.

These linguistic principles proper do not possess the character of necessity and hence no linguistic changes can be predicted or foreseen. The only obligation in linguistics is that of mutual intelligibility which helps towards the maintenance of the system and in case of changes their identity inside one and the same linguistic group. These general principles then simply express the possibilities which the particular language can utilise and certain others which it cannot. Thus when we compare Spanish *hijo* with Italian *figlio*, Portuguese *filho*, etc. we may formulate a particular change that proto-Romance *f* has become *h*. But this is only a probability, the reverse change being also conceivable. What gives it certainty is the fact of a general theory that *f* can be transformed into *h* without any external influence, but not *vice versa*. When we compare Sanskrit *sa* with Greek *ho*, the formulation of the change IE. *s* > Greek *h* is based on the general fact that *s* is subject to being changed into *h*, but the converse is not true. And these are the principles of general linguistics.

General linguistics thus understood is not self-sufficient. It is based on descriptive and historical grammar to which it owes its facts. Anatomy, physiology and psychology can alone explain its laws, and the reflections drawn from these sciences are often useful or even necessary for giving a conclusive value to a number of its laws. Finally, it is only in special conditions in a determined social state and in virtue of these very conditions that a given possibility determined by general linguistics is realised. We thus see what place general linguistics has between the historical and descriptive grammars on the one hand, which are the sciences of particular facts, and anatomy, physiology, psychology and sociology on the other, which are the sciences of greater scope, determining and explaining among other things, the facts of articulated speech.

The other important contribution of MEILLET to historical linguistics is his clear formulation of the principles and methods of comparative grammar, which were implicitly followed by the neo-grammarians before him. The fact that linguistic facts are particular is the basis of

all historical and comparative studies. Between the means of expression and the ideas expressed there is no natural connection nor a necessary one, but a mere arbitrary or factual relation. Hence when two or more languages show a close similarity in these facts, it can only stem from their earlier historical identity, which gives us the definition of related languages to the effect that they are different evolutions of one and the same language which was spoken earlier. Apart from accidental similarity, the only other source is parallel development which produces a real difficulty in the method of comparative grammar, as it is not always easy in practice, to keep it apart from the similarity due to the relatedness of languages.

Language is a social fact and for an individual a complex set of associations which are peculiar to him. But in so far as he is a member of a speech community, similar associations are also present in all the other individuals of that group, and purely individual innovations are quickly eliminated. This system of associations is not directly transmitted from individual to individual, but each one has to form a similar system, both phonological and grammatical, by imitation of those around him. It is thus never exactly identical with any other, though more or less similar to them.

All spontaneous changes then show a continuity. They are not the result of conscious innovations, but are there in spite of the attempt to reproduce the given system and at no time are they so large and so numerous as to break the continuity of communication or the feeling that it is the same language that is being used. This spontaneous linguistic evolution is the result of the natural succession of generations, the use to which language is put and the identity of the tendencies and aptitudes which the members of a speech-community possess. A second type is a change which is effected by the borrowings either from another language or from a closely connected dialect. A third type of change is the result of a community changing its language and thus transforming it to a considerable extent. Comparative grammar must take note of all these three sources and keep the changes resulting from them clearly apart.

The study of linguistic development is possible because both the conservations and innovations—whether pertaining to the phonetic material or grammatical and lexical elements—are quite regular. When they refer to the sounds which are modified in the same way in all the places where they occur, and the original fluctuations in usage of the first generations have no value for historical development in the long run,

they are called the phonetic laws or more exactly the regularity of phonetic correspondences.

There are, however, a number of reasons, which mask the regularity of the phonetic laws. Words of particular pronunciation like the utterances of infants, or words of a more formal type like greetings may escape the working of the law. Again sounds in different environments may not develop in the same manner. And different tendencies often cut across each other and all of them are so complex that the regular change may be confined to a single example.

Secondly, the associations existing among forms bring into play analogical changes which may go counter to the effects of phonetic laws. And borrowings from related dialects where a different tendency is operative may introduce elements in the language which may not agree with the expected results of the laws. Even borrowings from the written form of a language may produce exceptions. When all these causes are taken into account, one may even go to the extent of saying that nearly each word has its own particular history. In the phonetic laws, as also in morphological laws, which state the correspondences, what we observe is not the act which produces the correspondence, but the result and it is important to note that it is not a single act but many complex acts which are responsible for it. There is, however, a difference between the phonetic and the morphological laws. When an articulation gets modified, the speakers of the new generation are incapable of reproducing it. But when a morphological pattern gets modified, it may leave behind many examples of the older pattern as precious relics of the earlier stage.

Language forms a system in which the parts are closely tied to each other. As such, a change effected in one part of it has its results felt in other parts as well and the changes show a kind of interdependence. This is as much true of the phonology as of the morphology of the language. Thus, although the changes which occur in a language are peculiar to itself, they are circumscribed by the limitations imposed by considerations of anatomy, physiology, etc. It is thus easy to understand that the laws of phonology and morphology of a language not only apply to all the relevant material of that system but also hold good for all the speakers of the language belonging to the same generation.

MEILLET has the additional merit of posing the basic problems of historical linguistics in a clear and precise manner, round which most of the theoretical discussion of the following period centres until the rise of structural linguistics and its effects on historical studies of

language. These basic problems are : the regularity of phonetic change and its causes, the relationship of languages, the validity of the comparative method and its limitations and the value and nature of the reconstructed forms and features of the proto-languages. Of these, the question of phonetic change continues to loom large in linguistic science and the different views held about it, ultimately traceable to the differences in attitude towards language shown by the linguists, can be briefly sketched by analysing the views and opinions of a few representative scholars of different schools.

E. HERMANN makes a strenuous attempt to disprove the doctrine of the neo-grammarians that sound-change and phonetic laws admit of no exceptions and that they are regular in their operation. He insists upon drawing a distinction between the conditions which make such changes possible and the driving forces which produce them. Following E. OTTO, he points out that the conditions can only be of three types : the properties of vocal speech, the sensible qualities of the external world around us, and the psycho-physical disposition of men. As these include language, the speaker and the objects about which we speak, they are exhaustive and no more of them can be found. OTTO gives only three forces of change, inertia, striving for clarity and beauty. HERMANN, however, believes that the driving forces include all the spiritual forces of man, which cross and re-cross and sometimes are opposed to each other. A general view of these forces can be got from the list of six such tendencies enumerated by HAVERS which are : *Abbildetendenzen*, which include the force of creating expression and imitation ; *Ästhetischetendenzen*, particularly the expression of one's mood, feeling and striving for beauty ; *Entspannungstendenzen*, the discharge of emotion and strong feelings ; *Streben nach Kraftsparnis*, especially inertia, *Ordnungstendenzen*, especially class-formation, striving for clearness, distinctness, intelligibility and symmetry ; *Socialartriebkreis*, especially courtesy, modesty and caution. In addition, he thinks it necessary to distinguish between the different degrees of consciousness which accompany the process of linguistic change ranging from fully unconscious, unconsciously effective, semiconscious to fully conscious ones.

HERMANN examines the numerous probable and improbable theories proposed to explain the genesis of sound-changes like climate and geographical situation which may cause change in the vocal organs, differences between the vocal apparatus of different people, change in the basis of articulation, changes in the external conditions of speakers, the building up of viable sound systems, variation in pronunciation, the accumulation of minute differences over a long period, the learning

of languages by children, the normalisation of usage, slips of the tongue, the speed of utterance, the different layers in the speech-community, sound-substitution, sound-analogy and many others and comes to the conclusion that none of them requires that the sound-laws be without exception. The evidence of the dialect geography also leads to the same conclusion and there are numerous historically attested changes in the IE languages which cannot be said to be without exceptions. The more general rules formulated by GRAMMONT for dissimilation are no better in this regard and there is no reason to accept the position of LESKIEN as regards the nature of sound-laws. This does not, however, mean that all kinds of changes are to be admitted as happening in language which would be the negation of the scientific nature of linguistics. The denial of the exceptionless nature of sound-laws makes for more stringent demands on the linguists, four of which he specifies. The process of linguistic change must be studied on the materials of living languages in order to avoid idle theories. The historical phonology of languages must be brought in agreement with the experience derived from living languages. The general laws of change in the sense of GRAMMONT, which lie behind sound-changes must be separated and formulated, and the atomistic and systematic researches must be made to supplement each other.

While HERMANN takes the position that the case of regularity of all sound-laws is not proved and cannot be proved by the facile way of attributing all their exceptions to other causes like analogy, etc., JESPERSEN stresses the fact that there are numerous occasions on which the sound-laws cannot operate and thus show regularity at all times. He refuses to believe that sound-changes obey blind, fatalistic sound-laws and that they always produce irregularity in the language, which is repaired by the forces of analogy, which also explain the exceptions to the sound-laws.

According to him, language is activity, chiefly social activity undertaken in order to get into touch with other individuals and communicate to them one's thoughts, feelings and will. It is a purposeful activity and naturally changes which affect it must serve one purpose or the other and can thus be regarded as either beneficial or harmful to it. Language consists of the collective habits of the speech-community and an individual makes his own selection out of it to build his own speech. All innovations first occur in speech, either of one individual or of several independently, and then get introduced into the language.

Linguistic change is an undeniable fact of experience, and is guided by two opposite tendencies; one pertaining to the individual working

for greater ease and subversive in nature; the other of a social character leading to distinctness and greater intelligibility, but of a conservative nature. The ease of pronunciation does not belong to the sounds in themselves, which are neither easy nor difficult, but to their occurrence in given positions. Thus stops like *t, d, k, g* and fricatives like *ð*, are in themselves neither easier nor harder, but voiced stops and fricatives in an intervocalic position are no doubt easier than voiceless stops. Latin *impono* is easier than *in-pono* and [hænk-] easier than [hændk-] in *handkerchief*. Most of the grammatical changes are due to the desire for distinctness and sometimes due to the effort to be over-distinctive as in English 'est' became more frequent (truest) than 'st' as in earlier English kind'st.

The purposeful nature of language-activity explains the presence of exceptions to the sound-laws, which cannot be explained on the mechanical ground of mere frequency of occurrence. Irregular changes are due to the ease of understanding and the worthlessness of the words both to the speaker and hearer alike, like formulae of greetings, formal addresses, etc. This also explains the presence of numerous double forms in the language, drastic abbreviations of words like *cab-(riolet)*, *auto-(mobile)*, Ger. *ober-(kellner)* and elliptical expressions like *a copper (coin)*, *she is fourteen (years old)*. Even purely mechanical changes like the accented and unaccented forms (Eng. *of* and *off*, [dæt] and [dət]) are soon turned to account as useful modifications with different functions. Though we cannot argue that some sound changes do not occur in a language for the purpose of preventing a possible inconvenience that may arise on account of it like the creation of homonyms, thus attributing to language a kind of foresight, there is no doubt that when an inconvenience has arisen, its further spread is certainly prevented and numerous devices are used by language to remedy it. Of the two homonyms, one is dropped (English let 'hinder', let 'allow'), or compound expressions are used (court-yard, subject-matter). Aesthetic considerations like the avoidance of repetition (Ger. *morgen früh* for *morgen morgen*), psychological considerations like the fear of appearing a stutterer, or disagreeable associations or the desire to bring more or less correspondence between sound and sense or even consideration of the system of the language may influence sound-changes as they do changes of forms. Taken as a whole, the changes which occur in a language make for progress.

Ch. BALLY advances a similar line of arguments to prove that sound-changes are not mechanically regular. Following the ideas of DE SAUSSURE, he also believes that historical linguistics has no relation to the synchronic study of a language and the two must be kept apart. The value of a synchronic system depends upon the syntagmatic and

paradigmatic relations of its parts and their historical origins have no bearing on these. To the speaker of a language they are unknown and of no concern. Secondly much of historical linguistics is devoted to the archaisms and survivals in a language, which is of marginal importance to the speaker at a given time.

There is never a perfect harmony in the system of a language and there are reasons for it. Language changes without a break. At any given moment in its life, language is in a transitory equilibrium. It is the result of two opposing forces, tradition, which retards the change which is incompatible with the regular use of the language and the active forces which push it in a definite direction. Moreover, the tendencies working in a language do not affect all its system equally. In French, while the nouns have lost all their inflections, the verbs keep them to a considerable extent. If the early MIA has drastically modified the verbal system of the old IA stage, the nouns have much the same forms as earlier. Then there are the loan-words in a language. Even there we must further distinguish between those which are integrated in a language like Latin words in French or Sanskrit loans in Marathi and those which are felt as standing apart like English loans in French and NIA languages. The linguistic system thus appears to be a vast net-work of constant memory associations, sensibly the same among all the speakers of the language, associations which extend over all the parts of a language like syntax and stylistics, its lexicon and word-structure and even its sounds and features of pronunciation like accent, melody, etc.

Historical linguistics recognises that phonetic changes are not phenomena of a type which uniformly cover the entire surface of the phonetic material of a language. The words subject to a phonetic law do not undergo change in the same manner in all cases, but do so differently according to the category to which they belong or according to the role they play in discourse. An independent word does not change in the same manner as an agglutinated word in a group (Hindi *majh-dhār* but *mē* 'in'), a simple word like a word analysable into elements, a word with its proper meaning like a word of a purely grammatical signification, a usual word like a technical or rare word, an onomatopoeic word like one which is purely arbitrary, a word expressing a colourless idea like a word charged with emotion and feeling etc. In short, when sound-changes occur, the signifiants do not change independently of the signifiés.

The case for the regularity of phonetic laws is very well stated by M. GRAMMONT. Sound-changes are the undeniable facts of language

and can be clearly seen by comparing an earlier stage of a language with a later one. Such a comparison reveals to us that certain phonemes have disappeared and others are profoundly modified. Phonetic changes do not refer to the letters which are used in their formulae but to the articulations of the sounds which alone are linguistic realities. When one makes a statement that in French at a certain date an *s* between two vowels has become *z*, what is meant is a particular articulation by which an intervocalic *s* differs from either an initial *s* or an *s* before consonant undergoes the change.

Phonetic changes do not pertain to a given phoneme alone, but to a feature of articulation, which may also occur in many other phonemes. Thus the change of one phoneme may imply the change of many others. Hence there are no isolated phonetic changes. All the articulations of a language constitute a system where all are dependent on each other. Hence it follows that if a change is produced in one part of the system, there are good chances that the whole system may get modified, for it is necessary that it should be coherent.

A phonetic law is the formula which defines a change suffered by an articulation in a language in a given region and at a given time. The phonetic changes are regular because they do not consist in the change of a word or a group of words but in the modification of a mode of articulation. In the limits of time and space which are peculiar to it, the phonetic change is valid in an absolute manner. If an articulation is found in a word, it is found in all; if it changes in one case, it is changed in all cases, except for particular reasons. Each phonetic change has a natural cause, and phonetic changes which appear exceptional are only disturbances caused by causes equally natural. Phonetic laws have no exceptions which cannot be explained psychologically or historically; for they are the result of causes inherent in the language at a given time and place, and no human will enters into their action.

Phonetic laws are valid only for a given place and time. When a law has worked out its effects on the phonemes subject to it, these phonemes no more exist in the language in their original form. If they were to reappear later on due to, say, composition, derivation or borrowing, they may remain unchanged or undergo other changes, which may or may not be the same as on the earlier occasion. Phonetic laws differ from physical laws in the fact that while the physical phenomena remain essentially the same over a long period of time and space, phonetic laws depend upon multiple conditions which have no chance of getting repeated twice identically. The phonetic law may differ

from village to village because the state of language is not the same, nor the heredity of children even in a close society. But certain phonetic laws cover a very large area.

Phonetic changes do not arise all of a sudden in the midst of the articulatory system of a language, but they naturally follow, at a particular time, from the general tendencies of a language. All languages are perpetually growing and have their special evolutive tendencies, which depend upon the earlier history of the language and are realised in successive stages. Thus the tendency to collect the articulation towards the centre of the palate has appeared in the Indian region from the most ancient period and has remained alive and active upto our own times. It has successively affected all the phonemes which are found to be suitable for its action either due to the articulatory position or when external causes may turn them suitable for it. During certain periods the changes accumulate and change the language beyond recognition in a short space of time. During other periods there appears to be a stalemate, but the work of modification goes on, the results of which may appear much later. There are cases where many phonetic tendencies may concur and lead to the same result; in other cases different tendencies may come in conflict and contradict each other; and one may recede before the other.

Besides these tendencies in languages, there are other laws of general phonology which exist over and above the languages and dominate them. They are human in the sense that they are common to all human languages. They take shape irrespective of the limits of time and space, whenever certain similar conditions are found. They are present in all languages such as assimilation, dissimilation, metathesis etc. GRAMMONT lays great stress on their formulation and the way in which they function. Such a formulation, for instance, pertains to the disappearance of final consonants. Consonants which are less close are lost first. Each when its turn comes, disappears first before pause, then before vowels, later on before consonants, and in the last situation ordinarily first a gemination is produced and then the gemination is simplified by dropping the implosive part of it.

For BLOOMFIELD sound-change and its regularity are not matters to be logically proved or disproved but are the basic assumptions of historical linguistics. The methods developed by the linguists of the 19th century are still the working methods of linguistics. They have been refined but not replaced. Under these methods the phenomena of linguistic change can be compactly recorded and classified and even subjected, within methodologically defined limits, to inference

and prediction. Like all scientific methods they are justified by their performance and only by this.

His assumptions of historical linguistics state that every language changes but so slowly as not to disturb communication at a given time, and the uniformity of this change over a given area depends upon the density of communication. The change affects phonemes or groups of phonemes which thus leaves out reference to meaning. The change must affect the phonemes at every occurrence and do away with the older form of any phoneme that is changed. Changes in the analogic forms, sound substitution and loan-words constitute sudden sound-change and do not contradict the regularity of the gradual sound changes.

The so-called exceptions to sound-laws, put forth by the linguists who do not believe in their regularity, do not invalidate for BLOOMFIELD the value of these assumptions as working methods. He admits that a great many facts remain unexplained. The phenomena of assimilation and dissimilation of non-successive phonemes and the contamination of significant forms do not fit into his assumptions quite neatly. Many forms and groups of forms deviate from the expected shape like the Germanic *Wolf* or the Greek Nom. sg. *poûs*. These form the residue waiting to be explained and in this linguistics is no better than the other branches of human study. The postulate of sound-change without exceptions will probably always remain a mere assumption since the other types of linguistic changes are bound to affect all our data. As an assumption however, this postulate yields, as a matter of mere routine, predictions which otherwise would be impossible. In other words, the statement that phonemes change (sound-changes have no exceptions) is a tested hypothesis; in so far as one may speak of such a thing, it is a proved truth.

The remaining problems of linguistic affinity, the nature of the comparative method and the value of reconstruction are very intimately related and linguists are likely to hold views which are quite interdependent. Here the basic question is to ascertain the exact nature of linguistic affinity or genetic relationship on which is based the idea of a family of languages and which makes the use of the comparative method of a historical type possible and often leads up to the reconstruction of the original language. It is worth mentioning that the comparative method used in the typological studies has no historical implications and can at most furnish indirect hints on the historical growth of languages.

The basic idea behind the traditional view of a language-family can be thought of as something like the following. An observation of such modern Romance languages as French, Provençal, Italian, Spanish, Portuguese, etc. or a group of languages like Hindi, Panjabi, Gujarati, Marathi, Bengali, Oriya, Assamese and a few others reveals striking similarities in phonetics, morphology, syntax and vocabulary and leads us to believe that they have sprung from a common origin. In fact, we find that Latin in the first case and Sanskrit in the other fairly satisfy the conditions of this supposed common origin. Based on such experience we imagine the events to have happened as follows. A given language when spread over a wide area and carried over to speakers of different forms of speech soon develops dialect forms. Innovations arise at different points in the speech community and spread over a more or less wide area thus separating the original homogeneous area into different regions with their own peculiarities. As linguistic geography has amply proved it, these isoglosses rarely coincide with each other, but a group of them may cluster together and thus produce marked dialect boundaries. When these differences become accentuated due to lack of communication caused by a number of causes, the chief of which is the migration of an ethnic group, these dialects develop into languages which are no more mutually intelligible but continue to show the family likeness. A family of languages, thus, is nothing but the different forms which an original language assumes in course of centuries by being developed into divergent ways. Once this is conceded, a comparison of such languages as English, Dutch, German and the Scandinavian languages should lead us to postulate their common ancestor called Germanic, though we have no direct records of that speech and by comparing this form with other groups like Italic, Hellenic, Slavic, etc. we postulate the common ancestor of all and call it IE. The languages which developed out of it form the IE family.

This basic theory is sharpened and made more precise with the help of a number of observations based on experience. The changes in a language may be caused by the very fact of its transmission from one generation to another or its being adopted by the speakers of a different language. But in whatever way a language may change the speakers of that language never feel any break in its tradition and this continuity is the real basis for considering the language the same, though used over a long stretch of time. In a number of cases, people speak two languages giving rise to a state of bilingualism which generally precedes extensive borrowings and a change of language by a given population. But this does not in any way interfere with the continuity of a language tradition and the speaker is always conscious and definite

of the fact that he is using a particular language system at a particular moment in his speech activity and never confuses the two.

The genetic relationship based on continuity is a historical fact and permits us to draw two conclusions of a practical nature. It would not imply that two such related languages must show actual resemblances at a given time provided they do so at an earlier period, nor does it require that they must show it for a majority of cases, requiring all the features of the original state to be preserved. Being a statement of the way in which the language has developed in a particular manner, this relationship is absolute and admits of no gradation.

The method and evidence used to set up such families of languages have to be carefully sorted and used with necessary caution and reservations. The resemblances must not be mere chance similarities but exact phonemic correspondences which may recur in a large number of items and thus show a regularity. This will help keep out the borrowed words, which are also revealed by their unusually close similarity. Words which owe their origin to either sound-symbolism or based on elemental similarity must be excluded, and use must be made of the basic vocabulary which is less likely to be borrowed than items of cultural value.

The real problem involved in the method of comparative studies of the historical type is to keep apart the inherited material of the language from the borrowed one. While the vocabulary is subject to the influence of borrowing to a great extent, its morphology and phonology are not easily influenced that way, and specific similarity in sounds and morphemes of frequent occurrence are of greater weight than mere items of the vocabulary. Even here we must set aside such features of the grammar as can be explained by means of the general conditions common to all languages; and similarities in structure, where the possibilities to be used are limited, must also be excluded. Concrete facts of grammar like an irregular form of declension or conjugation, the use of two stems to fill up the same paradigm, a group of words showing a common semantic field, an unusual rule of syntax, etc. are the features which have the greatest probative value in this regard.

This theory has its limitations in actual practice. In many cases, what we have are mere items of vocabulary of a language and little or no grammar, or the peculiar structure of the language excludes any complicated morphology, thus making the use of this method precarious. There are special languages developed for specific purposes like the argots and slang forms and even secret languages based on

artificial rules, and these cannot be handled in the same manner. But, above all, dialects of the same language which show very minor phonological and morphological differences and which can penetrate each other at all levels cannot be submitted to this procedure. Nor it is necessary, because their genetic relationship is never in doubt.

Against this view of genetic relationship, an attempt is made to formulate another kind of linguistic unity to replace it as an explanation of the similarities which are observed in a number of languages and the reconstruction of a common origin in the form of an 'ursprache' is denied any validity. Languages are regarded as forming a close group showing many similarities of sounds, grammar, syntax and vocabulary, not due to a common origin, but as a result of mutual contact and interpenetration. Such languages are said to form a 'sprachbund' and the study is given the name of areal linguistics, suggesting the idea that, being confined to an area, languages show similarities of the type used for building up language families. The model for such a view can be seen in the group of languages spoken in the Balkan Peninsula and a similar situation is found among the languages spoken in the sub-continent of India.

SANDBELD has pointed out that the Balkan group of languages includes Greek, Albanian, Bulgarian, Serbo-Croatian, Roumanian and Osmanli Turkish. They belong to different families or sub-groups, though a majority of them are in the long run assigned to the IE family. These different languages have produced a number of common traits which have produced a linguistic unity which, in many respects, is similar to the unity which is due to common origin like the Romance group or the Germanic group. There are a large number of words which are common to all. But apart from these which can be easily transferred from one language to another, the mode of expression shown by these languages is strikingly the same. They appear to be animated by the same basic spirit. Thus the idea of keeping silence is expressed by an expression like 'to remain without mouth' in Roumanian, Bulgarian, Albanian and Greek, and an expression 'he eats with his wife' means in all these languages, he quarrels with her. Their syntax is often identical. They use a subordinate clause in place of an infinitive. The term of polite address is used with the second person of the verb. These similarities are not confined only to syntax and phraseology, but extend to morphology and phonetics as well. MIKLOSICH has pointed out that these languages show a common mode of forming the future with a verb meaning 'to desire, will', an absence of the infinitive, a common form for both the Gen. and the Dative cases, the affixing of the definite article after the noun,

the frequent use of the sound *a*, the use of *m* and *n* at the beginning of a word as syllabics, an alternation between *n* and *r* and many others.

There can be no doubt that these similarities are of later origin and due to mutual influences of the languages upon one another. The common Slavic possessed an infinitive and hence its loss must be later than that period, and many of the features are due to the Greek *koine* from which it has spread to other languages. In no sense can they be regarded as indication of a common period of growth in a genetic sense. The reasons for this state of things are also quite clear. Except for the Turks, all the Balkan people continue the traditions of the Byzantine culture and all of them have lived under the Greek Church for more than a thousand years. They have developed a fairly homogeneous culture marked by common popular beliefs, traits of literature, usages, customs, etc.

MIKLOSICH and SCHUCHARDT suggest that all such common features, which are foreign to these individual languages in earlier stages, are due to the sub-stratum of an Illyrian or a Thracian form of speech which must have spread all over the Balkan area. This means that languages of different origin and structure can develop a kind of family likeness due to the effect of a common substratum or due to their life in an area of common culture.

A similar state of things can be seen in the group of Indian languages which belong to three different families, Indo-European, Dravidian and the Munda group. Because of their mutual interaction and close contact, India as a linguistic area shows a number of common features. EMENEAU points out that all of them show the retroflex consonants distinct from the dentals or alveolars; they have a series of postpositions to perform the function of the cases which are identical for both the singular and plural; a continuous narration is usually effected by the use of a gerund; all show the abundant use of echo-words with a kind of reduplication; most of them show a kind of classificatory or quantifying words to be used with nouns, and a group where these families meet together, we have the development of the peculiar dental affricates distinct from the palatal ones. To these we may add a kind of negative conjugation and verbal paraphrasis to express the various aspects of actions.

Linguists like TRUBETZKOY, BOAS, PISANI and historians like ALTHEIM have drawn the theoretical implications of such situations and many others like the common traits among the Ural-Altaic languages, American Indian languages, etc. to the effect that they disprove the validity of

common origin of languages based on similarities. TRUBETZKOY remarks 'there is no compelling reason for accepting a uniform IE original language, from which would develop the individual IE language-branches. It is equally possible to think that the ancestors of the IE language-branches were originally unlike each other, but due to constant contact, mutual influence and borrowings, have come closer to each other considerably by degrees, without, however, becoming completely identical with each other'. It is further pointed out that in earlier stages of civilization the multiplicity of languages was the rule and only under favourable conditions did uniform languages of wide spread arise by the process of absorbing and displacing other languages. This is what happened in case of Latin and Greek *koine*. We can also speak of degrees of relationship and regard a language as more or less belonging to a family according to the features it shows. It may also happen that a language may get loosened from its original affiliation and form a new one as happened in the case of Venetic which lost its Illyrian connections and got assimilated to the Italic group.

The idea of a pre-ethnic common language and the theory of genetic relationship of languages based on it is attacked on a number of grounds. First, it is argued that there are no such uniform languages pre-supposed by the theory and no uniform IE can be regarded as either necessary or provable. There always existed not only regional differences but also vertical differences inside each region between the different social layers. The features common to a number of related languages cannot be attributed to this speech because these isoglosses may belong to different periods and are not always contemporary. If a particular branch separated from the parent stock, this remnant continued to develop and we cannot assign any definite time and place to this reconstructed common origin, which is essential for a real natural language. Secondly, common features can arise as much on account of a common origin as due to a later process of assimilation. After all, all innovations start at one point and spread to others by essentially the same process of borrowing. Thirdly, there is no basic difference between borrowed elements and elements which are inherited. As remarked by TRUBETZKOY 'words which are borrowed early are usually called related elements, while those which are borrowed later are recognized as borrowings.' The difference is merely one of relative chronology. Nor can we make a distinction between the vocabulary of a language and its grammar on the basis of their capability of being borrowed. All elements of a language are subject to such transference from one language to another and no similarity between them necessitates the supposition of a common origin. Lastly, there are the types of languages called Pidgin speech

and creolised languages which can be considered as connected with either the one or the other language, out of which they have arisen.

The argument of the uniform proto-language brings us to the question of the nature and validity of the reconstructed forms based on comparative evidence. It is easy to see that those who deny the presence of a parent language draw their arguments from the fact that the reconstructed form of speech cannot be a real language because it differs in its nature from actually existent languages by being too uniform and too systematic. They thus tend to regard the reconstruction as having the validity of actual languages and emphasize its phonetic accuracy in order to discredit its possibility. On the other hand, an emphasis on the mere formulaic nature of the reconstructions may make it easy to believe in the existence of the parent language with a good deal of variation in its scope. Linguists have shown varying attitudes towards the reconstructed forms ranging from a firm conviction that they are the real forms of the proto-language to the idea of a mere formula to express the evidence of the existing languages in a concise form with no validity of their own.

DELBRÜCK attacked the validity of the starred forms on the ground of their subjective nature. He clearly states that the parent-language like the IE is not a mere phantasy, there was a pro-ethnic group and possessed a pro-ethnic language in the past. But the picture we get of this language depends upon the views of the linguists who reconstruct it and differs from scholar to scholar. What was reconstructed by SCHLEICHER as **agras* 'field' is reconstructed by BRUGMANN as **agros*. The reconstructions are thus mere formulaic expressions of the changing views of scholars about the nature of the parent-language and not the language itself. But there are more serious difficulties in the way of reconstructions other than this relativity of our knowledge in a progressing science which is not peculiar to linguistics alone. In many cases our evidence makes it necessary to set up alternative forms as in the case of N. sg. *mātēr* and *mātē* or Gen. sg. *mātros*, *mātres* or *mātr̥s* according to the forms in different individual languages. These alternatives may not be in the parent-language from the very beginning and may have resulted from analogical formations in the course of its development, but we have no means to ascertain its growth and naturally we cannot form an exact idea of the state of things at a given time in the parent language. We do not know whether our reconstructed forms have originated at different times or not. J. SCHMIDT compared a reconstructed sentence of the IE to a sentence from the Bible made up of words from Ulfilas, Titian and Luther, which is obviously an unreality. But this anachronism extends to words, phrases and even individual

sounds. If it is likely that an IE form like **solwos* existed as such, based on the comparison of Sk. *sarvas* and Greek *holus* (from **holwos*) because the suffix-*vo* was not productive in both the languages, the same cannot be true of comparisons like Sk. *sarvatāt*, Gr. *holotēs* or Sk. *pītryas*, Gr. *patrios*, Lat. *patrius*, and we cannot ascertain that the elements were necessarily put together in the IE period. In case of a reconstructed word like IE *dek̑m d* and *e* can be considered as certain, but the nature of *k̑* and *m̑* remains doubtful and their phonetic nature subject to dispute. In many cases like Sanskrit *aham* Gr. *egō* the evidence does not lead us to a single form and we are forced to admit that different sounds were current in different regions in the parent language. Then there is the additional difficulty of ascertaining what correspondences are based on a common origin 'a Proto-IE form' and what are due to an agreement based on similarity of rules of word-formation 'a common IE form.'

But the reconstructions serve some practical purpose. They are convenient statements of the various actual correspondences found in the historically attested languages, and they bring into the focus the question of deciding whether a given form is original or a new formation, thus urging for greater clarity. This may often lead to an improvement of the method and E. HERMANN has suggested that one should always begin with individual languages and reconstruct their earliest forms before one tries to harmonize them with each other. He also points out that it may be useful to distinguish by some convenient sign reconstructions like IE **esti* which are considered as historically true and real, and those which are mere formulaic like Germanic **hauzjan* 'to hear'.

MEILLET believes in the parent language as a real thing but considers its reconstruction as subject to some important limitations. The purpose of reconstruction is not to reconstitute a vanished language and we cannot also do it. He emphasises the fact that a strictly historical grammar is possible in case of written languages only, when we can get documentary evidence of the earlier stages. But for the spoken form of the language, which is the real language for him and which is at the basis of the languages which developed from it in course of time, no historical grammar is possible and only a comparative approach is available. This explains why a comparison of the Romance languages does not end up with the Latin language as given to us in its literature. But this reconstruction with the help of comparative material suffers from a number of shortcomings. First of all, it does not give us a complete picture of the parent language. What we get is a skeleton of the system of the language and what is arrived at are the minimum units

required to explain all the correspondences, which alone are historically given to us. If the parent language possessed any more of these we have no means of ascertaining them and our knowledge of it remains incomplete. On the other hand, we may have attributed to the parent language many features which it did not possess because of correspondences due to parallel developments in different languages. The idea we form of the parent language is also not exact. What we establish are units representing the correspondences like *dh*, *bh*, *g^wh* but not their exact phonetic nature. All we say is that they are distinct from each other but nothing more. This common basis of the correspondences is a mere hypothesis which is unfortunately unverifiable and hence lacks scientific certainty. And it is obvious that much of the material of the parent language which is lost to all its descendents cannot be recovered. Hence, for the linguist the only reality available is the correspondences between the languages historically attested and nothing else. These alone are his positive facts. In short, what comparative grammar furnishes us with is not the restitution of the parent language lost long ago, but a system defined by the correspondences between the languages descended from it. It is also clear that this system has its own earlier history, but we cannot get at it because no related languages of that speech are available and only a comparative evidence can help us to go a step back in the past.

But it is not true to say that reconstructions are mere formulae for given correspondences. As such they will have no significance and whether to set them as one, two or more will be of no concern. MEILLET himself points out the importance of being very careful in setting them up, and whether to set two or three correspondences in case of the IE velars is a matter of deciding the number of phonemes of the parent language. As pointed out by BUCK, the reconstructions are something more than mere formulae. They imply a certain interpretation of these correspondences, either a conviction or a provisional theory regarding their approximate starting point and thus a view about the development which occurred in the history of these languages. They become important only when we interpret them in such a way as to indicate which sound in the correspondence is the original, what has been the direction of change, etc. Though they are not the ultimate object, they are a convenient intermediary.

They do not define the precise sounds of the parent language, which is impossible even in the case of historically attested languages like Greek or Sanskrit or Latin. They are as close an approximation to the actual sound as the evidence permits and do indicate the range of these sounds, which is more so when we reconstruct the whole of the

system of the parent language. We can go a step further and point out that a reconstructed IE *e* had the quality of affecting a preceding velar in the direction of a palatal articulation and behaved like *i* in this regard, thus forming a pair distinct from the other vowels like *u*, *o*, or *a*. An IE *esti* is as near the word of the parent language as a written form can be of a spoken word. These reconstructions show different degrees of approximation to the real nature of the parent language and it is worthwhile noting them. While an IE *e* is pretty certain, the IE *a* is less so and IE *bh*, *dh*, etc. may be either aspirates or fricatives. But we are not concerned with small variations in the pronunciation in the parent speech. Presumably sounds in that speech showed certain slight variations as do those of living languages, without, however, affecting their essential unity. There are, however, some reconstructions which cannot have any linguistic reality like the IE long sonants \bar{m} , \bar{n} , etc. and their only value lies in being condensed statements of the correspondences on which they are based.

It is again pointed out that the reconstructions do not reflect the state of the parent language at a given time, but they belong to different periods and as such lack a synchronic validity. Here also they are approximations of different values. When BRUGMANN sets up an IE **bhud^hdhos*, he believes that the so-called law of BARTHOLOMAE and the development of a sibilant between two dentals already occurred in the parent speech and were contemporaneous. And when he sets up an IE **sest^htos* he considers that the assimilation and development of the sibilants were present there together. BUCK considers it safer to write these forms as IE *bhud-to-s* and *sed-to-s*, which, of course, would make them more formula-like and less near the actual language. But is it against the nature of a real language to have forms side by side even when they are of different origin? All languages abound in archaisms and old survivals and the reconstructions need not be objected to on this ground.

Even the argument based on differences in the language due to social layers does not invalidate the establishment of a common language. THIEME has pointed out that in this regard the pre-historic conditions need not be different from those of the present day. Just as the speakers of dialects try to follow the norm of a literary language whenever they come in contact with speakers of other dialects, the same must have been true earlier, with the only difference that in recent days the means of spreading the forms of the elegant form of language are more powerful than earlier. In the case of the IE common language, there is no doubt that what we reconstruct is the elegant literary (standard) language as reflected in the bardic poetry of those times. We may even detect

the influence of the spoken dialect on the literary norm in the use of a velar in place of the expected palatal in Baltic, showing doublets, which is a peculiarity of a literary language. ALTHEIM has already observed that whenever we find something like a common language as the basis of a language family as in case of the vulgar Latin or the Greek *koine*, it presupposes conditions like the presence of a literary language which went on alongside the spoken forms, corrected it, nourished it and finally replaced it. Even this condition is fulfilled in the case of the common IE. Thus we may conclude that in spite of the facts that our reconstructions are at best *dissecta membra*, disparate in regard to the time of their origin, showing dialectal variations side by side and of different degrees of approximations, they do represent a real common language. A final peculiarity of reconstruction also gets explained in this light. While we admit alternative forms in the morphology of the parent language, we generally set up distinct sound-units for all contrasting correspondences. This agrees well with a *hochsprache* with an overall phonemic system and different morphological forms of near-identical meaning.

The question of the similarities among languages as due to a later process of assimilation as opposed to a kind of differentiation is only of a theoretical nature and both the possibilities look alike only in an abstract sense. In a given situation, it is rarely difficult to decide which of the two is to be accepted. The similarities due to a common origin pertain not only to the items of the vocabulary or words of a purely lexical nature but permeate the whole of its grammar. They include sounds, formative elements, grammatical processes like ablaut, syntactical constructions of peculiar nature and nearly all the aspects of the language. But what clinches the point in such a case is the peculiar nature of the similarity and its relation to the general system of the language. Both Sanskrit and Greek show the same word for 'sheep' *avis* and *o(v)is* but that both show an unusual G.sg. as *avyah* and *oios* is a feature which cannot have developed as a result of mutual borrowing. When we look into other words which have the same type of archaic Gen.sg. like Sk. *kratu*, *madhu* or *paśu* and find parallels for them in Greek and Latin, etc. we cannot explain it as due to a similarity induced by later assimilation. As pointed out by SANDFELD, the similarities among the Balkan languages go hand in hand with the use of different words and inflections which are of a more specific nature and similarities among these alone can lead to a conclusion of a common origin. When we compare the quantifiers of Indian languages like Marathi *jaḥ*, Bengali *jan*, Hindi *janā* with Kuwi *goṭṭa*, Parji *goṭa* and Munda *koḍowa*, we can immediately sort them out into three groups which agree with their genetic relationship, though the whole mode of

quantifying may be due to cohabitation in the same area. But the most convincing evidence comes from the way in which these similarities have been formed, which is revealed by the direction of their growth. The similarities among the languages of a common origin are bound to and do become greater and greater as we look into their earlier forms, while the reverse is the case with those due to common symbiosis. In the first case, the lines indicating this similarity converge as it were and we have simply to extend them in the past so that they meet together. It is a patent fact that there is more similarity among the older forms of the IE languages than between their modern forms. VENDRYES often remarked that modern French has little similarity with the IE structure and in the absence of its earlier forms no one could have thought of its IE origin. Again, as we trace back the history of such languages, all their aspects, sounds, morphemes, roots, formants and inflections, become more and more alike forcing on us the conclusion that in a not too distant past they must have been one and the same language.

The way in which a linguistic innovation spreads in a language also differs from the way in which a borrowed word spreads. A morphological innovation like the neuter from IE *yugom* produced out of a collective *yugā* spreads as an integral part of the language system and differs from the borrowal of a lexical item which may also spread from speaker to speaker. Neither the first user nor others who follow him ever feel it to be an element foreign to the language, which feeling precisely qualifies a loan-word. The same is true of a phonetic change. MEILLET has noted the difference between the spread of the change of pronunciation of the group of sounds written as *oi* from [we] to [wa] in the Parisian form of speech which he calls 'a spontaneous phonetic innovation' and its spread by borrowal to other French dialects called by him 'sound substitution.' One may reject his analysis that in the first case there is a kind of necessary urge which manifests in all the speakers of the dialect independent of each other, the fact remains that this spread is of an element which is felt as an integral part of the language system and not a foreign element picked up from another system to be assimilated to its new environment in course of time.

The basic fact of genetic relationship of languages and comparative grammar thus proves to be a distinction between the inherited material of the language and the borrowals of all types. The difference does not pertain merely to the period of time when the words are borrowed, not even to the type of material which is borrowed but it lies in the processes of transmission which are basically distinct. We must keep apart the process of borrowing of items from a foreign language which

is primarily lexical and only secondarily giving rise to grammatical elements and phonetic features, the process of the spread of an innovation of either a sound or a morphological or syntactical feature inside the language itself and the process of borrowing the pronunciation of an already existing word from a common language into a dialect, or from a dialect into the common language or from one neighbouring dialect into another. In the ultimate analysis, the difference proves to be of a psychological nature. In the first type the morpheme is felt as foreign both in its phonemic form and its meaning, in the second none of them is thought to be so, while in the third case either the one or the other aspect alone is felt as new or a foreign element.

The last argument in this regard pertains to the claim made for some languages that they can be regarded as belonging as much to one family as to the other. The extreme forms of this type are the so-called pidgin and creolised languages and one may regard them as mixtures of languages in all their aspects. They are regarded as also proving that borrowings can affect all levels of a language, and we have to fall back upon such external criteria as the amount of the material preserved from one or the other language or the age of the material (which is earlier and which is later) to decide their affiliations. The analysis of a number of such languages by R. A. HALL has revealed a few interesting facts about them and that investigator thinks that these languages do not in any way invalidate the genetic relationship of languages. Chinese Pidgin, for instance, shares features with English which is called the 'base language' and with Chinese called 'the native language'. But the bulk of its features are such as are common to them both, while in a few cases it has developed its own peculiar features. Even then, if we consider the structure of such a language and its systematic correspondences the pidgin or creolised language is definitely nearer the base language than the native speech. What we have to consider in such cases is not a mere similarity in individual traits, nor yet the general resemblance in linguistic structure, but specific correspondence in all the phases of the language structure, phonology, morphology, syntax and vocabulary. In the case of Haitian Creole, all systematic correspondences point in the direction of French while similarities with African languages are mostly non-systematic. The way in which these languages arise may point out to its genetic relationship. Haitian Creole, for instance, arose as a result of the speech of the French-speaking masters in the 17th and 18th centuries being copied by African slaves, who were systematically scattered on the plantations to keep them from coming in contact with other speakers of the same language. More precisely, it is the result of the African slaves trying to speak the French language of their masters. This naturally resulted into a consi-

derable reduction of grammar and many sound substitutions. HALL, however, finds no difficulty in classifying Haitian Creole as specifically a Romance language belonging to the North-Gallo-Romance group and Taki-Taki, and Pidgin English as Germanic, belonging to the west Germanic group, very close to English.

The objections made against the comparative method can be grouped into a few main approaches. Many of them are the same as those against the realistic value of the reconstructed forms and need not be reconsidered. Others again are based on the denial of a genetic relationship of languages and these have been already dealt with in that context. But there are a few more, which are specifically against the comparative method as such and these have to be considered, if comparative grammar, which forms the main prop of historical linguistics, has to retain its validity and scientific nature.

There are a few objections against comparative method which are more in the nature of its difficulties and limitations. They in no way invalidate it and are common to many other branches of linguistics and also many other scientific pursuits. In the case of many languages we do not succeed in finding other languages which are near or distant relations of these, as in the case of Basque, Bharushaksi or Etruscan. In others we know only a few words and have no knowledge of its grammar. The method does not produce the same results in morphology as in phonology and comparative syntax is virtually unknown. If we can reconstruct the roots with fair amount of success, complete words and phrases are rarely to be recovered. There are many such limitations.

More serious is the objection of ALLEN that comparative method is not general enough to form part of general linguistics. Its applicability to the IE field is due to a number of favourable circumstances. In many cases we possess the earlier form of languages which makes it easy to see their relationship which would not be possible in the case of the more modern forms of these languages. The historical evidence available to us makes it possible to eliminate the bulk of the loan-words and the orthographies of our historical texts are unambiguous and nearly phonemic. In the absence of similar conditions, the comparative method may not be applicable, and hence does not possess the generality of say the descriptive analysis. He suggests that another type of material may require other methods. If this means that comparative method cannot be applied to all kinds of language groups like the Balkan languages, or European languages, etc. where no genetic relationship is implied, it is true and comparative method is not general in the sense in which typological comparison can be

general. But this is no defect of the method as such, unless we can show that the method cannot be applied even in its legitimate field of a group of languages which are genetically related. Its scientific nature is in no sense compromised because its field does not cover all languages taken in any groups one likes. Moreover, the favourable circumstances in the IE field are not a mere accident and similar situations can be produced in other fields as well. Any language can be reduced to a phonemic writing and such a phonemized corpus may alone be used for comparative purposes. Loan-words, as we have seen, can be eliminated not only on the ground of historical evidence, but on the basis of many other structural considerations and their presence does not always vitiate the method. A reconstructed IE* *g^wōu* may or may not be a loan in the parent-speech from Akkadian, but if it was present in the language before the divergent tendencies began in the common speech, its reconstruction is quite legitimate and does no harm to the comparative method. The comparative method applied to the Germanic languages would certainly reconstruct words of the Germanic language which may have been borrowed from Greek or Latin in the common period and this is as it should be. The comparative work done by BLOOMFIELD on the Algonquian languages and many similar attempts at reconstruction of other related groups of American Indian languages are proof enough to show the applicability of the method to languages whose earlier history is not known to us. As pointed out long ago by MEILLET, the very merit of the comparative method is to fill in the gap where historical evidence is lacking or take up the work where historical material comes to an end.

Long ago MEILLET pointed out a serious difficulty in the use of the comparative method. It fails to distinguish between similarities due to a common origin and similarities due to parallel developments in a number of languages. In the absence of any external evidence the method is likely to consider all such features as coming from the original language. Here is his most famous example of a parallel morphological development. In a considerable portion of the Slavic languages we find the 1 p.sg. ending in *mi*. But in the common Slavic period it was confined to a couple of verbs only. During the middle ages, in the historical times, this innovation has happened independently in Czech and Serbo-Croatian by analogical extension, when the different languages were already separated from each other. A similar situation can be seen in Indo-Iranian. The ending-*mi* of 1 p.sg. present is common to both Sanskrit and Avesta, but this innovation of replacing the original thematic ending -*ō* by -*mi* occurred in the two branches independently, because we possess the older form of Avesta in the Gathas wherein the older forms in -*ō* continue to exist. BLOOMFIELD did reconstruct

Proto-Algonquian words paaškesikani 'gun' and eškoteewaapoowi 'whisky', which are obviously post-Columbian.

A reasonable way to imagine what happens in such cases is suggested by HOCKETT : 'When a speech-community has split, inherited speech-habits are for a while fairly similar and may lead to the independent analogical development of forms which look like inherited cognates'. This is what most probably happened in case of the Slavic and Indo-Iranian examples. In other cases, it is also possible that old terms may have got new semantic contents which may be true in case of the Algonquian example. Or it can be an innovation in some dialect which spread over others by the usual process, in this case the borrowing being a case of loan-translation. The ultimate question then boils down to ascertain whether it is a case of borrowal or a spread of an innovation over contiguous area or an independent development in a number of languages or dialects. Only in the last case does it conflict with the comparative method. But here again we are insisting too much on a logical procedure to define different dialects or languages. When a number of changes occur in a given area, we want to pick up the first one to occur (if we can ascertain it) as the logical criterion of language-differences and all others which then follow it and cover areas on both the sides of the first isogloss as parallel developments. Instead of arguing that the change of *s* to *h* in Greek, Armenian and Iranian is a case of parallel development because these languages have developed differences already in some other respects, one can as well consider this a single change spread over a large contiguous area. This is nothing else than a specific case of the failure of the comparative method to reconstruct the relative chronology of the ends of the common features, as it cannot reconstruct the relative chronology of the beginnings of the common features of the parent language, an obvious limitation but no cardinal fault of the method.

ALLEN has indicated a few more defects in the comparative method. The method uses systematic correspondences as its basis and these presuppose the identification of comparable items from the related languages. Usually the lowest limit of the unit of identification is a morpheme and sometimes a word, and rarely more than a word. This identification can only be on the twofold basis of phonemic and semantic similarity at the same time. In descriptive analysis, a morph is identified on the basis of such a similarity and the analyst can insist on a perfect agreement in regard to both, though the semantic criterion is rarely fulfilled in the same manner as the formal criterion. When, however, the analyst takes up more than one dialect for his description of an over-all phonemic pattern he allows some amount of latitude in

the actual allophonic limits and no objection is taken to an identification across such dialectal differences. In a strictly historical comparison the phonemic and semantic difference may be considerable, but provided it is regular and easily understood an identification is accepted. When we pick up parallel words from different languages to build up a phonemic correspondence or to reconstruct the original word, we naturally allow more latitude because of the implication that the two languages have developed independently of each other to a greater extent. It is not correct to say that we identify Latin *ovis* with Sanskrit *aviḥ* (as ALLEN does) not even in the sense in which Sanskrit *hastāḥ* may be regarded as the same word as Hindi *hāth*. They are cognates and are related through their proto-type IE **owis*. We set up these correspondences because they work out systematically over a large number of cases which excludes chance in their agreement and indicates a common origin, and not because we want to accept any corroborative evidence and neglect the conflicting evidence. A correspondence from L. *manus* and Skt. *hastāḥ* like L.m. = Sk.h is not extracted because it does not work presumably in any other pair and so on. But having set up an equation like Sk. a. = Gr.e. = Lat e, no one hesitates to set up an equation like Sk.a. = Gr.o. = Lat.o, because the second is likely to contradict the first, but both are admitted because they work in a fairly large number of cases. The semantic identification is more difficult and has to be used with proper circumspection, and this difficulty is also met with in an ordinary descriptive morphological analysis. The reconstructions both in form and meaning are, however, set up on the basis of following the path of least resistance, requiring minimum changes to be postulated in the forms which are compared.

The other difficulty pointed out by ALLEN pertains to the conflicting results which follow the use of different groups of languages from a related lot. Long ago HERMANN pointed out that a reconstructed IE only on the basis of Keltic, Germanic, Baltic, Slavic and Albanian would differ greatly from the usual reconstruction based on fuller evidence and frankly admitted that such a reconstruction on the evidence of limited material would be false. That addition of fresh languages to the comparison alters the comparative formulae is certainly no defect in the method as such.

Finally, ALLEN argues that a comparative grammar in the strict sense of the term is not possible. What goes by its name is really comparative phonology applied to morphological elements of derivation or inflections. This is due to the fact that the initial step of setting pairs and drawing correspondences between grammatical categories is extremely difficult and cannot be done on valid grounds. But here

again too much stress is laid on their paradigmatic values. Though Sanskrit has seven cases and Latin only five, a study of their distribution should make it clear that the N. and Ac. of one may be identified with the N. and Ac. of the other though we cannot straightway do the same with reference to Abl. though both are called by the same name. Moreover, this difficulty recurs in all types of linguistic work and is not confined to the comparative method in historical linguistics. ALLEN himself admits it in his typological comparisons which he admits as scientific. His own solution is to effect an identification via situational-contextual criteria, which may not be quite impossible. His other objections to comparative method are based on the use of structural material in it and must be taken up later on for discussion.

The results of all this discussion can be briefly stated. Historical linguistics is as scientific as any other branch of linguistics. It is based on particular facts in languages and from these particular facts alone it draws its historical validity. Among others, it makes use of the comparative method to extend the scope of the history of a family of languages when documentary evidence is lacking. The method is based on the systematic nature of languages and the way they change in course of time, making use of a strict scientific procedure to arrive at results which are precise enough for the purpose meant and based on the nature of the evidence used. Its strength and its weakness is rooted in the social nature of the linguistic material with which it deals and it has all the advantages and shortcomings of a historical study as such.

II

STRUCTURAL APPROACH IN HISTORICAL LINGUISTICS

THE rise of structural linguistics round about 1930 has produced a real revolution in linguistic thought and practice. It is true that structural ideas and methods were partly known and also used to some extent in the works of earlier linguists. But a regular theory of structural approach and its extensive use in the analysis of language really started with the use of the idea of phoneme in linguistics and then spread to the other aspects of language like morphology, syntax and vocabulary, though not with the same success and with comparable results. In the initial phase, this trend shifted the centre of interest from the historical problems, which dominated linguistic science in the 19th century and the earlier part of the 20th century, to the synchronic descriptions of languages and a general theory of linguistics. This naturally led to the formulation of a body of doctrines relating to the systems of language as such called 'general linguistics' as opposed to the historical linguistics of the traditional type. This opposition drew its inspiration from the dichotomy postulated by DE SAUSSURE between synchrony and diachrony and often led to a view that these two approaches are incompatible with each other. By emphasizing the strictly systematic nature of the one and the purely individual nature of the other, it was possible to show that the approaches are mutually exclusive. It stands to the credit of the pioneers of the Prague school to attempt a kind of reconciliation between the two by stressing the fact that in a synchronic system, if any part of it undergoes change, the whole system is modified, and the task of diachronic linguistics is not to follow the changes in the individual items in the system but changes in the system as a whole. JAKOBSON thus started the kind of study which has now been given the name of 'diachronic phonemics'.

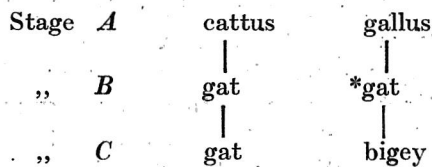
As pointed out by MARTINET, structural linguistics does not denote any uniform system of linguistic doctrines to which all structuralists would subscribe. There are basic and deep-rooted differences in the views of the various schools of structural linguistics like the Prague school, or the American school, or the followers of glossematics or the London school. But what is common to all of them is the belief that language is a system of functional units, a kind of *sui generis* type of organisation that transcends any random similarities between actual performances of isolated items. An item in the language has no value unless it is placed in a given linguistic frame of reference. These items

derive their real value by the oppositions they form with other items in the system and their intrinsic nature is of secondary importance. Again common to all structuralists is the distinction between the two levels in language, that of the meaningful elements called the morphemes and the units of distinctive function called the phonemes. And in spite of many theoretical divergences, there is a considerable amount of practical agreement in the results arrived at by the linguists of the different schools. If they differ at all, they can be very easily transferred from one statement to another.

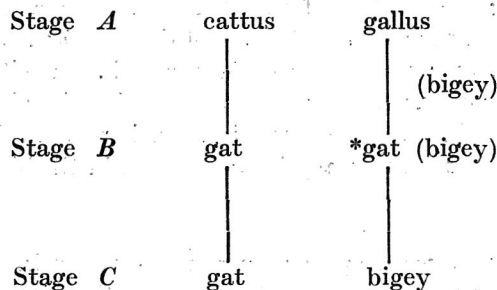
Not all these structural approaches have shown the same interest in historical linguistics. The approach of the London school tends more or less to deny the validity of historical studies to judge from the pronouncements of ALLEN, and in other cases the earlier type of historical linguistics has not been much changed by their synchronic views. It is difficult to decide the position of historical linguistics in the glossematic theory of the Copenhagen school, but it appears that diachronic problems would find a very minor place in that system as a whole. Both the Prague school and the American school have never dissociated the two approaches from each other, although they have kept them distinct from each other. BLOOMFIELD's book on language gives as much importance to the one as to the other and the historical studies in this tradition are strongly influenced by the trends in the descriptive analysis of language. The Prague school took the lead in applying the concept of the structural approach to historical problems and even suggested that many of the time-honoured problems of that study may get a more satisfactory solution with those new methods and procedures. Very soon a diachronic phonology was developed by the side of the synchronic phonology and this interaction between the two has led to many improvements in the historical study of language.

The relation between synchrony and diachrony in the study of language now gets a more significant aspect and their interrelations are more clearly brought out. It is apparent that there is no fundamental opposition between the two. Nor is their difference merely due to the point of view from which the study of language is approached. The two are interrelated because of the nature of the object of their study, language, which is both a system and a growing thing at the same time. What we call the structure of the language at a given time and place is not something that is stable and unchanging, but a kind of composite picture in which the various elements, no doubt deriving their value because of the relation to the whole system, do not belong to the same period either in their origin or in their frequency in the whole language

or even in their relation to the expressive needs of the community which makes use of that particular language. In the Prakrits, for instance, the pattern represented by a verbal form like *kunai* and the past participle like *kaya* does not belong to the same period of origin as the one found in *sunai* and *suniya*. The frequency of an expression like *sa akāsi* is not the same as *teṇa kayam...* And the expressive needs are not satisfied to the same extent by the two future forms like *gacchai* and *gamissai*. On the other hand, the function of the language depends upon the values of its elements which can be based only on the structure of the language in which different units stand in opposition with each other. The distinction found in Sanskrit forms like *sa akarot sa cākāra* and *sa akārṣīt* cannot be felt in the Prakrit languages with their expressions like *sa akāsi* or *karithā* and *teṇa kayam*. Unless the structure of the language gives an occasion for the purpose, a linguistic change is not likely to be effective or get completed. As pointed out by WARTBURG, where a word like *bigey* replaced the original word *gallus* for a cock in Gascony, the real picture of the events is not to be imagined as



as was done by GILLIERON, but rather as



This means that the replacement was not simply caused by an inconvenient situation in the language due to the homonymy of the two words meaning 'cock' and 'cat' but that a spontaneous creative activity had already at its disposal both the forms *gat* and *bigey* to express the idea of the 'cock' and the structural situation was only the occasion for the elimination of the one and the retention of the other.

The two are also interrelated in their aims and methods. To begin with, a diachronic study cannot make much progress without taking

note of the synchronic state of a language that is studied. As far as the method of historical linguistics is concerned, it has to cut up the continuous growth of a language into different sections and study the system of the language at those points, taking as it were a cross-section of the whole. Then it can compare these different synchronic descriptions with each other and take note of the changes which the system has undergone. Failure to do this was precisely the main defect of the earlier type of historical studies. By merely picking up individual items in the system of a language, say a given sound, a given word, a particular grammatical category, or even a specific construction, its course of development was followed by either tracing its origin or following its growth in time. The history of the language thus became nothing but a loosely accumulated diachronic descriptions of separate items, a purely atomistic view of language. This prevented the linguist from getting hold of the change in the real value of an item, or the causes which were active in the system itself, or the effects which a change in a part of the system had on the system as a whole. In this sense a synchronic analysis of a language at its different stages is a logical prerequisite of any diachronic study and the value of its results depends directly on the value and accuracy of the other. It is obvious that with poor synchronic material of languages, neither the comparative method nor the method of internal reconstruction can be used with any good results. On the other hand, the comparative method attempts a kind of reconstruction of the parent speech or an earlier form of the language is obtained by internal reconstruction. But what is attempted is not, as we have seen, a mere accumulation of facts of the lost stage, but a systematic picture of that stage as a basis for understanding the growth of the language or languages. This can be useful to the extent to which we are able to get a synchronic analysis of that stage and understand the value of its parts in relation to the system as a whole. Much of the difficulty of understanding the nature of the reconstructed forms and sounds, and the problem of the real or fictitious nature of the reconstructed parent language disappears, when we remember that the aim is a synchronic description of that stage as far as the evidence available helps us to get at it.

The effects of the structural approach in historical linguistics can be viewed in three different ways, all of which can be considered as leading to a more accurate type of studies. The terminology of the descriptive analysis, in spite of its luxurious growth and often a private nature which is quite unnecessary, is definitely more precise and in many ways an improvement on the terminology of the earlier historical studies. Along with this terminology goes a finer demarcation of the basic concepts and essential distinctions which were overlooked earlier

making for a clarification of the issues involved and a removal of many unnecessary complications and pseudo-problems in the field. The new approach has also brought into the field a few new concepts which were unknown before, and these have made a definite progress possible, and has added a few newer methods to the study or has sharpened the procedure of the earlier methods. It is clear from the very nature of the case that all these three ways are closely dependent upon each other and cannot be kept clearly apart. But it may lead to a more convenient exposition to deal with them separately.

The use of the term phoneme as different from a sound implies a basic distinction between a linguistic unit viewed as having a definite function in a language and a unit which is looked at from its physical nature and make-up. In this sense, the indiscriminate use of a phoneme by DE SAUSSURE is now replaced by a more precise use of the term which sharply contrasts the pre-structural phonetic view-point with the purely linguistic functional approach of phonology or phonemics. This distinction between phonetics and phonology is the very basis of all structural approaches and it has added a corresponding distinction between a phonetic change and a phonemic change in historical studies with far-reaching effects. That these two are quite distinct can be best seen by looking into cases where the two are not found together. Normally, a phonetic change is expected to lead to a phonemic change in a language-system, provided the phonetic change is wide enough to go beyond the usual minor variations which the utterance of any given phoneme in a language implies, and then leads to some kind of change in the existing contrasts of the language. Thus an intervocalic *t* must have grown more and more voiced in one of the Middle Indo-Aryan dialects Śauraseni by a regular process of phonetic change. Very soon it must have reached a stage of voicing which made it indistinguishable for an original voiced dental stop *d*. Thus an original OIA word like *mata* must have sounded like *mada* which could not be kept apart from another word like '*mada*' coming down unchanged from the OIA stage, by any difference in its phonetic make-up. This resulted in wiping away a contrast between the two which existed in the earlier language, and with this the phonetic change became a phonemic change. A similar thing must have happened with the initial cluster like *kn*- in old English where the articulation of the first sound was slowly weakened until it completely disappeared and the two words 'know' and 'no' could no more be distinguished from each other merely on account of their sound differences. But the difference between the two can be best seen in cases where one is present in the absence of the other. A phonetic change may occur and continue over a very long period, but may fail to produce any

change in the phonemic structure of the language and then would have no structural value and not become a phonemic change. The original contrast in the language between the phonemic units or between individual items remains unimpaired and undiminished. We know for instance that the semi-vowel *w* was a bilabial fricative in the IE period, but has become a labio-dental continuant already in the oldest period of OIA. But this has remained a mere phonetic change and no contrast is thereby eliminated, simply because in the earlier stage there was no labio-dental fricative beside the bilabial one. From the statements of the Indian phoneticians, it appears likely that the apical trill *r* was either pronounced as a retroflex or as an alveolar trill, which may be the case at different periods in Sanskrit or may be a dialectal feature. But this difference has not led to any structural changes in the language, no contrast being either lost or newly created. Hence the difference remains purely phonetic. The East Indo-Aryan change of a central [ə] into a low back rounded vowel [ɔ] is also of a similar type and whether in Marathi and Gujarati a nasal retroflex stop [ɳ] or a flap [ɾ] is pronounced in an intervocalic position is phonemically immaterial. We know that the Proto-Dravidian voiceless stops have become voiced and even fricatives in the intervocalic position in Tamil, but the fact remains a merely phonetic fact and has not led to any phonemic change, because the original contrasts are in no way affected.

The reverse situation, though less frequent, also occurs. When the unit undergoes no phonetic change, a phonemic change can occur and will affect the system of the language. This may happen in a number of ways. If the conditioning factors which first introduced the allophonic changes in a single phoneme, somehow, were lost at a later stage, the two allophones would now come to stand in identical environments and would naturally get the status of different phonemes. Something like this happened in the Slavic languages where the palatalised and non-palatalised allophones of the consonants produced by the word final extra short vowels *i̯* and *u̯* of the common Slavic disappeared and the two allophones began to contrast in the final position of the word. If a word is borrowed in a language from another language or dialect, a similar thing may happen. The MIA phoneme /c/ has developed in Marathi a fronted allophone [ts] before the back and central vowels and in the word-final positions, while before the front vowels the sound was a palatal affricate [tʃ]. But when words from Sanskrit were borrowed in Marathi in large numbers, the palatal affricate sound [tʃ] began to occur before the other vowels also in the loans and there resulted a phonemic change without the units involved undergoing any phonetic change as such. Thus a form like /vācā/ began to contrast

with a form like /vāčā/ and the two sounds became phonemically distinct. In English the allophonic distribution of [f] and [v] was similarly disturbed by words borrowed from Norman French, producing out of them two distinct phonemes. Sometimes an analogical extension of one sound in the place of the other may produce a phonemic change of this type. Thus when a form like *kim* was produced in Sanskrit when we expect a *cim* like *cid*, we find that *k* and *c* now contrast before *i* and thus produce a phonemic change, more specifically a phonemic split, here. In all these cases, we find it necessary to distinguish clearly between a mere phonetic change, a phonetic change leading to a phonemic change and a phonemic change which may not involve a phonetic change in the units concerned.

We may go a step further, and following GROOT, make a three-fold classification of sound changes on the basis of their effects on the phonological structure of the language. Setting aside non-phonemic changes, we can consider a phonemic change as merely affecting the phonemic shapes of individual morphemes and thus having least structural importance, or as affecting the inventory of the phonemic units by adding to them or reducing them, or as affecting the system of the phonemes thus introducing a change in its phonemic structure or plan. This differs from the scheme of GROOT as applied to Latin in that his type B stating the changes in phonemes *in abstracto*, can also be considered as mere phonetic change not amounting to a phonemic change, or a phonemic shift and as such of a different type than the other two. We can illustrate these differences from the change of the phonemic system of OIA into the MIA dialects. The two long vowels *e* and *o* of the OIA developed in the MIA period two allophones, a longer one in an open syllable and a shorter one in a closed syllable. But nearly to the very end of the MIA period, these allophones remained merely the positional variants of the two phonemes and did not produce any phonemic change as such. This is the reason why the script also does not show them and we have the statement of the Prakrit grammarians to rely upon for this subphonemic variation. In fact all allophonic differences of the languages now spoken have to be obtained from some external evidence as the system of the language is not likely to show any trace of these. In one MIA dialect Śauraseni, all the medial voiceless dental stops developed into voiced stops, a medial *t* becoming a medial *d* and a medial *th* becoming a medial *dh*. This certainly changed the phonemic shapes of a number of morphemes. What was *kathā* at an earlier stage now became phonemically *kadhā*, and a word like *rata* now became *rada*. But these changes in the morphemes did not produce any change in the phonemes of the language which continued to show both *t* and *d*, *th* and *dh* as distinct phonemes, because

they continued to contrast initially. When medial *s* changed to *r* in Latin, a number of words changed their phonemic shape, but the list of the phonemes remained the same as before. When we, however, note that the OIA stage had a phonemic contrast between three sibilants, a dental *s*, a palatal *ʃ* and a retroflex *ʂ*, all of which have become a single dental *s* in Śaurasenī or a single palatal *ʃ* in Māgadhi, we find a phonemic change which affects the inventory of the phonemes of the language with a reduction of two units. But this does not lead to any kind of systematic change in the structure. Such a structural change the MIA shows in its vowel system in which all the diphthongs of the OIA are eliminated and merged with the two vowels *e* and *o*. This produces a system of the vowel-phonemes of the MIA which is basically different from that of the OIA with its two categories of simple vowels and diphthongs. For such a structural change it is not necessary that the whole sub-system should disappear. The diphthongal system of classical Latin with its two units *ae* and *au* is different from a system from the earlier stage of such pairs of diphthongs as *ai*, *au*, *ei*, *eu* and *oi*, *ou*.

A similar distinction between a phonetic difference and a phonemic difference leads to a clarification of the problem involved in demarcating dialect boundaries. Dialect geography has already pointed out that different isoglosses indicating different phonetic changes in a language area do not always coincide and leave a fairly wide region which is customarily called the transition belt or area. But what is more distressing is the fact that on purely phonetic ground, while taking note of the change of a particular phoneme of the parent language it is not possible to draw an isogloss which could refer to all the words in which the sound occurs even in identical surroundings. The boundaries of the change in each word is different from another and hence a different map will have to be drawn for the spread of each word involving the phonetic change under investigation. Thus to take a well-known example the change of Latin *c* into northern French *ch* is found spread in different degrees in such words as *chat*, *champ*, *chandelier*, *chandille*, *chanson* and *chaine*, making it impossible to draw a simple isogloss to represent the change. Thus comes into existence the famous dictum: each word has its own history.

As pointed out by TRUBETZKOY, the picture of the dialect boundaries will get clarified if we keep apart the three types of differences involved in it. First of all, there are the differences due to etymological comparisons, where the sounds of words which are regarded as the reflexes of the same original word are compared and their differences noted down. Such differences are found to change from word to word and are of no

use in drawing dialect boundaries. The purely phonetic differences which we may find in the allophones of phonemes may also be of a transitory type and may spread from one area into another in slow gradation making a demarcation between them difficult. Thus it is found in the village dialects of the Khaḍiboli speech-area, that the realisation of the two-sounds *n* and *ɳ* is found to be a matter of gradually varying difference between the two as one passes from one dialect to another. But when one deals with phonemic differences the matter stands on a different footing. Whether there is a contrast between two sounds like *n* or *ɳ*, *l* or *ɭ*, *ɖ* or *ɽ* in a given area admits of a clear-cut answer as yes or no and leaves no transition area between the two. An isogloss based on a phonemic distinction can be always drawn with precision and the dialects separated from each other, whether the dialects are regional or social in origin. Of course, the two types of dialects need not coincide with each other.

Another concept in historical linguistics which is greatly clarified and brought in a more general type is the idea of ablaut, apophony or vowel gradation. The last of these names is based on the specific fact that such alternances in the IE languages pertain to only vowels and not consonants, and to this extent it is of a limited connotation. The use of structural methods in this phenomenon is due to KURYLOWICZ who has attempted a clarification of the idea in the IE field and given it a more generalised form so as to be applicable to other families of languages as well. This approach has also made specific the problem of its origin, though it has not exactly solved it.

In the earlier days the phenomenon was defined with a definite reference to the IE parent language. Thus BRUGMANN defined it to mean such quantitative and qualitative and therefore also accentual differences between the sonant elements of different word-forms which are etymologically and morphologically related, which are found already in the sound-differences in the Proto-Indo-European language. BUCK defines it in a similar fashion. The term gradation is applied to certain alternations of vowel which recur in the several IE languages and must have originated in the parent speech. They are to be distinguished from those alternations, which, however regular, have arisen under the special phonetic laws of a particular language. More recently KRAHE defines it as the regular alternation of some definite vowels in parts of words etymologically related, which is inherited from the Indo-European parent language. The limitations on the usefulness of a concept of such specific applicability are quite apparent.

Following the exposition of KURYLOWICZ, we have to distinguish between three different phenomena which are very similar to each other.

First there are the different allophones belonging to the same phoneme and occurring in mutually exclusive environments, also called combinatory variants or positional variants. If a sound in the morpheme is now found to occur in different phonemic environments, it will show an alternation in the allophones of that phoneme. But being phonemically irrelevant a phonemic transcription will neglect it and the writing would not show it. Secondly, there is the phenomenon commonly called the neutralisation of a phonemic contrast in certain phonemically defined environments. The two phonemes contrast in other places and must be distinguished from each other. Thus in German a /t/ and a /d/ will contrast initially in words, but no such contrast will be found in word-final position. Sanskrit will contrast a /t/ and a /d/ in all other positions except in absolute final of an utterance. In the position of neutralisation either the one or the other phoneme may be found, as /t/ would be final in German and Sanskrit, and not /d/. In phonology, the member which occurs in such a situation is called the unmarked member while the other one is called the marked member of the opposition. Such a situation will give rise to a regular alternation between the two phonemes if the morpheme occurs in different phonemic environments. A Nom. sg. *śarat* in Sanskrit shows an Acc. sg. *śaradām*, which shows an alternation between *t* and *d*. But this is not a compulsory alternation because a *t* as well as *d* can occur before a vowel. But as long as the alternation is defined by the phonemic environments, it cannot acquire any morphological significance and as such cannot be regarded as a morphological process. But when advantage is taken of such an alternation to make it a kind of bearer of the morphological category, so that it gets analogically extended to other cases of that morphological category even when the phonemic conditions are not present, we find an alternation which now cannot be defined in the light of the phonemic environment but by stating the morphological category in which it occurs. Such an alternation is understood by apophony or ablaut. We may thus define it as a morphologically conditioned morpho-phonemic alternation. In IE we find that there is an alternation between the vowels *e* and *o* where *o* is taken as the mark of the perfect formation and its presence is conditioned, among other things, by this morphological category as can be seen from Gr. *leipō* and *leloipa*.

This analysis of the concept of apophony indicates to us the way in which a search for its origin is to be made. It is a kind of a sub-morpheme which is present along with another specific morpheme which determines the category of its occurrence. The moment the other morpheme disappears the difference in the alternation will itself become the morpheme in question and cease to be a case of apophony. But it differs from the alternation between two phonemes in this that it

gets associated and extended to a particular morpheme class ; and the origin of this phenomena is to be sought in the specific conditions which led to this extension. As applied to the IE alternation between *e* and *o*, this means that originally there was neutralisation between these two phonemes in a specific phonemic environment, in this case before the sonant sounds *m*, *n*, *r*, *l*. Thus an original *er* in the basic form became an *or* in the form derived from it when it was followed by any of these sonants. Now, this change is interpreted as associated with the difference in the morphological category and not confined to the phonemic environment. Thus the vocalism of the derived form will be considered as *or* and then extended to all the forms belonging to the same category which explains how an *o*-vocalism of the perfect gets contrasted with an *e*-vocalism of the present in the IE. In this process two principles are involved, one called proportionality by which the same formal and functional relation between the base form and the derived form is maintained, and the other called polarity according to which one tends to bring in the maximum opposition between the primary form and the derived form.

A structural analysis of linguistic changes often brings out some of their aspects which were not noted earlier in the more usual approach. This can be well seen in the analysis of two such changes in languages, semantic change and analogical change, which HOENIGSWALD has shown to be intimately related in their process although the results are so different and has made it possible to apply the same type of analysis to semantic change, which had remained aloof so long. The point of view, which is one of the basic approaches of synchronic analysis, of distribution makes it possible to view these two changes as two types of essentially the same process. Descriptive morphology isolates minimal units of phonemic-semantic identity and calls them as morphs. Thus a unit like Sanskrit /*nā*/ will be considered a morph because it will keep its shape and its meaning (Int.sg.) the same wherever it occurs. Similarly, a unit like Skt. /*ā*/ will also be another morph with the same meaning but a different shape. Now they are found to occur after different nominal stems, say those ending in *i* or *u* are followed by *nā* but those ending in consonants or *r* are followed by *ā*. They are thus mutually exclusive, occurring in different environments and hence are grouped under the same morpheme which we may call the morpheme of Inst.Sg. If we now take an usual case of analogical change, we find that we can best state its nature with the use of these terms and concepts. In Vedic Sanskrit we find the distribution of these two allomorphs as something like the following : After a number of Mas. nouns ending in *u*, we have *ā* as in *paśvā*, *kratvā*, *paraśvā* and *śiśvā* (Group I), in a large number of other nouns ending in *u*, we have the morph *nā* as in

ketunā, *ṛtunā*, etc. (Group II) while in all neuter nouns ending in *u* (Group III) we have only *nā* as in *dānunā*, *druṇā*, etc. In a 4th Group of words like *marut* we have only *ā*. We can represent the situation as follows :

	Group I	Group II	Group III	Group IV
<i>ā</i>	✓	—	—	✓
<i>nā</i>	—	✓	✓	—

In the Classical Sanskrit the distribution of these allomorphs is different. Here we find :

	Group I	Group II	Group III	Group IV
<i>ā</i>	—	—	—	✓
<i>nā</i>	✓	✓	✓	—

as can be seen in examples like *paśunā*, *paraśunā*, (Gr. I), *guruṇā*, *ripuṇā* etc. (Gr. II), *madhunā*, *vasunā* etc. (Group III) and *marutā* (Gr. IV). When we say that the suffix *nā* is analogically extended to the nouns of Group I in the period of Classical Sanskrit, what we are noting is the fact that the distribution of the two allomorphs has changed, the morph *nā* extending to an environment which was originally occupied by the other morph *ā*. An analogical change then involves a redistribution of the allomorphs of a morpheme or the occupation of a given environment by two different allomorphs in the two stages of the language between which the change occurs.

An analysis of semantic change in the frame-work of distribution will bring out its essential similarity with the analogical change. Sanskrit used two words *mṛtaka* and *sūtaka* to denote the impurity caused to the near relatives by the death of a person or the birth of a child, so that the distribution of these two terms showed an environment common to both when any type of impurity was meant (E1) and two environments peculiar to each of the two terms (E2, E3) according as the death of a person or the birth of a child was involved. We may chart the distribution as follows :

	E1	E2	E3
<i>mṛtaka</i>	✓	✓	—
<i>sūtaka</i>	✓	—	✓

In course of time the word *sūtaka* in Marathi, a descendent of Sanskrit, shifted its distribution in such a way that it came to be used in E2 and ceased to be used in E3 where another word *vr̥ddhi* came to take its place. Along with this, the use of the word *mṛtaka* in this

particular sense disappeared from the language. This situation can be tabulated as follows :

	E1	E2	E3
<i>sūtaka</i>	✓	✓	—
<i>vṛddhi</i>	✓	—	✓

A comparison of the use of the three words shows that the distribution of the words like *sūtaka* and *vṛddhi* or *mṛtaka* has changed, *sūtaka* being used in E2 where originally *mṛtaka* was used and *vṛddhi* being used in E3 where originally *sūtaka* was used. We call this a semantic change and say that the word *sūtaka* has changed its meaning. We can describe the situation also as a redistribution of the different morphemes involved or as the occupation of a given environment (in this case E2) by two different morphemes in the two different stages in the language between which the semantic change has occurred. The similarity of this analysis with that of the analogical change is obvious.

The distinction made between a phonetic change and a phonemic change has brought a good deal of clarification in the field of linguistic change as such. If a mere phonetic change in no way affects the phonemic structure of the language, it is easy to see that it has no effect worth noting. This naturally leads to a distinction between the results of a change and the process which leads to it. In fact there needs be no exact correspondence between these two aspects of language-change. A given process may produce changes of different kinds. Thus the borrowing of foreign words may produce a change in the phonemic system as it can be also produced by sound-change. Thus the vocalic system of Marathi did undergo a change with the borrowing of such English words as 'bat', 'bank' or 'ball' by adding two more phonemes /æ/ and /ɔ/. As we have seen, a phonemic split will be caused by the process of analogy as when Sanskrit developed /k/ and /c/ and due to analogical extension, as by the sound change of merger of /e/ and /o/. Thus all the three processes, sound-change, borrowing and analogical creation may produce the same effect namely a phonemic change in the language. Each of these processes in turn can produce different linguistic changes. Thus a sound-change may produce an alternation change as when we get an alternation in Sanskrit like *gacchan* : *gacchantam* due to the loss of final consonants from a cluster, which was however retained before a vowel. It can lead to a grammatical change as, in the case of most Germanic languages, the loss of the distinction in the unaccented syllables led to the breakdown of the nominal case system. It may even produce a semantic change when a sound change produces doublets and they develop different shades of meaning. The same

holds good in case of the other processes and hence it is essential to distinguish between the gross results of the linguistic changes and the processes or mechanisms by which they are brought about.

In case of a change like borrowing of words from a foreign language, it is equally easy to distinguish between the causes of such changes and the process involved. The borrowing process may be analysed as beginning with a kind of bilingualism due to language contact, and leading to the use of items belonging to one language system into another by an individual, which may later gain in frequency and become a regular element in the other language. But the causes which may lead to such a borrowing would be psychological reasons like the higher prestige of the one language as compared to the other, or the need felt by the speakers of one language to express a new idea or object with a word which is not readily available in the language. With this distinction we can view a linguistic change as involving three aspects, the causes which produce them, the processes or mechanisms, which follow and the results which are produced in the language system which has undergone a change. Such an analysis is of great practical value and structural approach has contributed to advance the study of each one of these aspects.

As the mechanism involved in linguistic changes shows different features in different types of results, a classification of the results of such changes is the first task of the linguist in clarifying the field of linguistic change as such. In a broad sense, the causes may be identified with what may be called the active factors or external factors which can be physical like the asymmetry of the vocal organs or psychological like the inertia of human beings or the factor of ease and sociological like the contact of one speech community with the other. The mechanisms of linguistic changes may be broadly thought as the conditions of such changes and can be regarded as the internal factors involved in it which will be mostly of a linguistic nature. The mechanism of semantic change for instance may prove to be a situation in which the speaker uses a word in one sense and the hearer understands it in another and then the other meaning gets currency. Being a part of the system of the language, these processes are the primary objects of clarification and these alone are amenable to linguistic analysis. As these become better known the field of unknown causes is bound to diminish and linguistic change as a whole may be considered as better understood.

A number of attempts are made to classify the phonemic changes, and such a classification has a bearing on the way in which such changes

occur. They thus form the basis on which is built the procedure of internal reconstruction. An early and comprehensive classification of phonemic changes is found in JAKOBSON's 'Principles of Historical Phonology'. He first distinguishes between sound-changes which have no phonological value and phonological mutations which affect the phonological system, so-called to draw attention to their sudden change, which is not true of ordinary sound changes. Whether new allophones arise or older allophones disappear or the unit changes its phonetic contents, the change has no phonemic significance. Phonological mutations are further distinguished between dephonolisation when a phonological opposition is lost and phonolisation when two units which are not opposed to each other develop such an opposition. The most frequent type of the first is the merger of the phonemes, while the second includes a phonemic split. A third type is formed by what is called a rephonolisation, when one feature which is pertinent for the opposition is replaced by another which is also pertinent. This is later known as a phonemic shift. In addition JAKOBSON points out phonemic changes in which one phoneme is later represented by two, thus shifting the burden of contrast from one segment to two, or its reverse when two earlier phonemes become one. A third type is represented by changes in the way in which phonemes form clusters. It is hinted that the phonological mutations may depend upon each other and form a kind of chain and a suggestion is made about the way in which the functions of phonemes may change, replacing stylistic variants by others. Finally he points out that one has to attempt a teleological interpretation of these phonemic changes which tend to establish a kind of equilibrium in the phonology of a language. Other classifications may be more briefly referred to. MARTINET classifies such changes as (1) those that do not affect the number of distinctive features in the language, of two types, (*a*) changes without any importance for the system and (*b*) those which effect a change in the mutual relations between the units, (2) those which reduce the distinctive features and (3) those which increase them. HOCKETT has suggested a scheme which distinguishes between a partial phonemic loss or a complete phonemic loss, a partial merger or a complete merger and a phonemic split, besides non-phonemic changes. HOENIGSWALD's scheme of classification comprises a merger of a phoneme with another or with zero; a merger accompanied by a split with some residue of the original phoneme or without any residue, rise of a new phoneme which can be considered as a split of zero; and a phonemic split with a merger in the environment which can be also represented by zero. PENZL has suggested a scheme which includes, changes in phonemic distribution and other phonemic changes, which, in turn are phonemic shifts, phonemic mergers, phonemic splits, monophonemization,

diphonemization and phonemic loss. By putting together these various schemes and suggestions, we may present here a fairly comprehensive scheme of phonemic changes.

(1) Loss of a phoneme = merger with zero :

(a) Unconditional loss : Latin *h* disappeared in the Romance languages ; IE laryngeals were lost in most IE languages ; IE *w* was lost in Greek. Indo-Iranian voiced sibilants *z* and *ẓ* were lost in Sanskrit.

(b) In limited position, conditional loss : IE *s* between vowels was lost in Greek ; final stops were lost in Greek and Latin ; MIA medial *-h-* was lost in NIA ; Sanskrit medial intervocalic consonants were lost in some MIA dialects.

(2) Phonemic gain :

(a) Zero in certain circumstances develops into a phoneme ; IE cluster *nr* developed into *ndr*. Sanskrit *mr* developed first into *mbr* and then into *mb* in MIA.

(b) A phoneme may be gained by borrowing : Marathi borrowed *æ* and *ɔ* from English ; English borrowed *ʒ* from Norman French.

(3) Replacement of allophones ; non-phonemic change :

(a) Two allophones merge into one : IA. *ñ* and *n* become *n* in Marathi.

(b) New allophones arise : Proto-Dravidian *t* develops into modern Tamil *[t]* and *[d]*.

(c) The single allophone changes its phonetic contents = phonemic shift : An apical trill has become an uvular trill in French and German : IE *t* (and other voiceless stops) has become Germanic *θ* (and other fricatives). IE *w* became Sanskrit *v*.

(4) Replacement of phonemes :

(a) One phoneme is replaced by another = complete merger : IE voiced and voiced aspirates become voiced stops in Iranian, Slavic etc., i.e. *b*, *bh* becomes *b* ; *d*, *dh* become *d* and so on. Sanskrit *ś*, *ṣ* and *s* becomes *s* in some MIA dialects *ś* in some others ; IE *e*, *o*, *a* become *a* in Indo-Iranian.

(b) One phoneme is partially replaced by another = partial or conditional merger = merger with split. Skt. medial *bh*, *dh*, *th*,

ph, etc. merge with *h* in Māhārāṣṭrī; IE medial *s* merges with *r* in Latin.

(5) Change of status (between phonemes and allophones) :

(a) Allophones become phonemes = phonemic split : IE (*satəm*) *k* becomes *k* and *c* in Indo-Iranian. English *θ* [*θ*, *ð*] becomes /*θ*/ and /*ð*/, OCS./*t*/ [*t*, *t'*] becomes Russian /*t*/ and /*t'*/.

(b) Phonemes become allophones : 'In some north great Russian dialects, the unaccented [*e*] and [*a*] become allophones of the same phoneme, [*e*] after palatalised consonants and [*a*] after non-palatalised consonants'.

6. (a) One phoneme becomes two phonemes = diphonemization = Middle High German *t* and *u* became new High German *ai* and *au*. In Ukrainian the phoneme /*p'*/ has become the phonemes /*pj*/.

(b) Two phonemes become one = monophonemization : Germanic /*sk*/ have become /*ʃ*/; IE /*sk̑*/ have become Sanskrit /*ch*/ : IE initial /*dw-*/ have become Latin *b-*.

(7) Change in the distribution of the phonemes : This includes well-known processes like (a) assimilation : Skt. *pt* > MIA *tt* ; *sapta* > *satta* ; (b) dissimilation ; IE aspirate + aspirate become non-aspirate + aspirate in Sanskrit and Greek *tithēmi*, *dadhāra*. (c) Metathesis : Sk. *acalapura* becomes Prk. *alacaura* ; *vārāṇasī* became *vāṇārāsī* (d) anaptyxis, a cluster disappeared : *Indra* became *ind-ra* and many other phonetic changes known to historical linguistics.

For the sake of completeness, we should now add a parallel classification of the morphological changes in the language.

1. Loss of a morpheme = merger with zero (loss due to the concept disappearing) = obsolescence.

(i) complete = loss everywhere. The numerous terms of different types of sons in older Smṛtis, which no more exist, as only two types alone survive, natural and adopted son. Loss of the names of sacrificial utensils, no more used. Terms of falconry in English, no more used.

(ii) Partial = survival in some limited context : archaisms in technical terms or proverbs or phrases ; *kith* and *kin*, *without let or hindrance* ; Indo-Iranian : *śahāmṛga*, Sk. *sanātana* (*sanā* not used alone) ; *sabhā* (*bhā* to speak is not used alone).

2. Morphemic gain :

A new morpheme becomes available in the language ;

There are two possible sources, (i) new creation which is rare and (ii) borrowals from other language systems.

(i) Few convincing cases ; *gas*.

(ii) Only cultural borrowings can be included in this group because both the form and its meaning are added newly : Russian *sputnik* ; *potato*, *photo* etc. in Indian Languages.

3. Replacement of one morph by another :

(a) A morph is totally replaced by another. This can happen either when its form suffers replacement (phonemic shape changes) or when its meaning undergoes replacement (semantic contents change). The first becomes also a case of one morpheme being replaced by another, while the second includes such semantic changes as *pen* (for steel pen only) or *ship* (for a steamer or for an aeroplane).

(b) Two or more allomorphs merge into one or get differently distributed—analological changes.

(c) New allomorphs arise : alternation change.

4. Replacement of morphemes :

(a) One morpheme is replaced by another *here/army*, *aśva/ghoṭaka*, *svasā/bhaginī*.

(b) One morpheme is partially replaced by another : usual type of semantic change : *meat* by *flesh*, *rajyate—lajjate*.

5. Change of status :

(i) allomorphs become morphemes : differentiation ; *rocana*, *locana*, *pārayati—pālayati*, *sāyā : chāyā* ; *carati : calati*, etc.

(ii) morphemes become allomorphs : *asti--babhūva dhāvati sasāra*.

6.(1) One morpheme becomes two :

vidhavā > vi + dhava, *asura > a + sura*.

(2). Two morphemes become one :

Abbreviations *śvāvidh-śalākā : śalākā*. *mātāpitarau : pitarau*.

7. Change in distribution :

All kinds of changes in constructions, formation of compounds, analytical and syntactical structures, etc.

One important result of the structural approach in historical linguistics has been a renewal of interest in the question of causation of linguistic changes, particularly sound-changes, which are now clearly separated into phonetic changes and phonemic changes. Though we may not go to the extent of suggesting that the phonetic laws of the neo-grammarians which stated the change of a sound in a particular phonetic surroundings like, the intervocalic *s* became *r* in a particular period of history of the Latin language, are now being replaced by real causal laws of the same nature as are found in the natural sciences, laws which are valid always and everywhere, there is no doubt that real progress is made in offering a causal explanation of sound changes in languages. The earlier attempt was primarily directed towards finding a single cause which could explain all sound-changes and these causes were always sought in the field outside the language-system proper. Thus it was easy to point out a few examples in one language or the other which contradicted the suggested causation. The distinction made by HERMANN in case of sound-changes and by HAVERS in explaining syntax between the conditions of change and the driving forces did not materially advance the study of this topic and the matter came to a blind alley. BLOOMFIELD could thus summarise the position with the remark that 'the causes of sound-change are unknown.'

The structural approach, however, made it possible to take a more comprehensive view of the matter and start with the supposition that there can be multiple and convergent causes leading to a sound-change and it is a legitimate task of linguistics to identify as many of them as possible and thus reduce the field of unknown causes. The most sustained attempt in this regard is made by A. MARTINET who elaborates a theory of sound-change which is remarkable both for its comprehensive nature and its insight into the numerous factors which have played a prominent part in the actual cases of sound-changes, seen in the numerous Indo-European languages.

To appreciate the theory both in its advantages and disadvantages, it is necessary to make a few distinctions in the causes of sound-change. First we must separate extra-linguistic causes from purely linguistic ones. All the earlier attempts unduly stressed the first group to the neglect of the other even when the second one is more amenable to analysis current in the science of language. MARTINET does not deny the validity of these non-linguistic causes. As a general supposition nothing is likelier than the fact that changes in language should be prompted by changes in the social life of the speech community and should react on the other aspects of culture. But it is found to be well-nigh impossible to coordinate features of language with features of

cultures which are non-linguistic and very little by way of establishing causation between the two can be attempted. Particularly in the field of phonology, which has no direct relation with the facts of external life, this is impossible, and hence most of the early attempts have proved fruitless. Two of them, however, are of a different nature. The principle of least effort or ease is a psychological fact of considerable importance in human life and does supply the moving force in linguistic changes. MARTINET calls it the principle of inertia which, according to him, works for economy in linguistic changes. Obviously, this is a reflex of the principle of economy which is so often invoked in synchronic analysis of languages at all levels. This principle expressed in the tendency of man to reduce his mental and physical exertion to a minimum has its limitation in the basic nature of language as a communication system which has to satisfy the expressive needs of the speakers to perform its function properly. The expressive needs are not always the same and change under different conditions. On the whole, they strive after units which are more numerous, more specific and less frequent, while inertia, on the whole of a constant nature, tries to make the units less numerous, more general and more frequent. Each language has to strike a proper balance between the two, and with the expressive needs changing they can never be the same at two different stages in a language. The other cause from the traditional list is the contact of one language system with another and presence of such contact supplies the other source of motive force in linguistic change. However well-integrated a language system, contact with another system supplies the initial push to it which can set other changes in motion. Particularly when it is the question of closely related dialects and the contact is of a very intimate nature, we can easily imagine the initial impulse of sound-change in such a situation; and one popular view makes all phonemic changes the result of such intimate dialect borrowing.

Of the remaining factors, we may distinguish between external conditioning factors and internal conditioning ones. The most important and constant external factor which exerts pressure on the linguistic system is what MARTINET calls the asymmetry inherent in the speech-organs. In the field of vowels, the distinction in the front series is greater than in the back series, and this constantly leads to reshuffling of the phonemic system in its attempt to achieve some kind of symmetry and integration. In the case of consonants also all the places of articulation do not show the same type of facility for continuing the different modes of articulation and this often leads to disturbances in the system or prevents the system from achieving full integration. A number of articulatory features are either incompatible with each

other or are not easy to work at the same time. Thus a distinction between rounded and unrounded or retracted and non-retracted is difficult to maintain and make audible in the openest vowels. The nasal articulation is not easily combined with fricative articulation, and all languages must combine sounds of different openings in a more or less alternate fashion. All such considerations go a long way to explain the changes of isolated phonemes and we may find that while a language opens a bilabial *p* into an *h*, it may keep intact other stops like a *t* or a *k*. The principle of economy may explain a few more individual facts. A phoneme may be lost more easily if it contains an articulatory feature found exclusively in it, thus effecting economy in articulation. A foreign phoneme may be absorbed more easily if the features which combine in it are individually present already in the borrowing language and so on.

Among the internal conditioning factors, we have to further distinguish between factors of phonemic nature and those which are non-phonemic. Features like stress, pitch, length, nasalisation and many others are found to be either phonemic or non-phonemic according to the nature of the language. But some of them, particularly stress, can be found to be directly related to the expressive needs of speakers and as such may have a profound effect on the phonemic system of a language. It is a very common fact of observation that the vowel system of the accented syllables is much different from the vowel system of the unaccented syllable, as in case of English in the final syllables or Latin in the medial syllables. The effects of the initial strong stress in the Germanic languages is well-known and is held responsible for the wholesale reduction of the final syllables which led to a complete breakdown of the distinctions in the inflections of nouns. As long as the initial stress can be predicted it cannot be given a phonemic status. All the same its effect on the phonemic system is obvious and is never disputed. Similar is the case with the *umlaut* phenomenon of the Germanic languages. The moment a phonemic distinction somewhere in the chain of speech is threatened to be lost, a non-phonemic distinction which goes with it tends to assume phonemic status and naturally reshapes the phonemic system. With the loss of the final distinction between O.H.G. *scō'no* and *scō'ni*, the vowels of the first syllables became phonemically distinct as *schon* and *schön*. This shows how the phonemic pattern can be made to expand when the average number of phonemes per word is reduced. Most of the other prosodic features are likely to work in the same fashion. Once such a feature gets associated with a morphological distinction, as German *umlaut* got associated with the formation of the plural, it is quite natural that it should get extended to other cases as well pertaining to the same

morphological category. This change was already noticed by earlier linguists under the name of analogical sound-change.

But the real merit of the new theory lies in making clear the effects of phonemic pressure on the sound-system of a language. Structural linguistics has made clear the fact that phonemes are affected both in their syntagmatic and paradigmatic relations. The changes which phonemes undergo due to the environment in which they occur are called their positional variants or allophones, and such changes are quite apparent throughout the history of languages. They were grouped under the general name of conditional sound-changes and earlier linguists classified them under the well-known categories of assimilation, dissimilation, metathesis, haplology and many others. Even in this well-worked out and fairly clearly understood field of sound changes, the structural approach has made some contributions. The distinction between relevant and irrelevant phonetic features in a sound system, for instance, would explain a difference which is observed in Sanskrit between an unassimilated group of *t* and *n* in *yatna*, but an assimilation between *vid* and *ta* into *vitta*. While voicing is a relevant feature in Sanskrit stops, it is not so in Sanskrit nasals and naturally plays a different role in the two systems.

MARTINET looks at the changes in the phonemic system of the language due to a phonemic pressure exerted on it from two points of view. When we look into the behaviour of a given phoneme in its dynamic relation to its neighbours not in the spoken chain, but in the system based on paradigmatic relations he calls these as due to the function of that unit. When we consider a phoneme as forming a member of a larger system more or less integrated part of it, this is called the structure of the language and the pressure exerted is of a structural type. This has a counter-part in synchronic analysis in the principle of pattern congruity or the neatness of pattern.

The phonemes of a language are not precise points on the phonetic chart but cover a fair amount of area on it, allowing for minor deviations from the norm. This normal range which in no way affects the identity of the unit is called its range of dispersion and can be best ascertained by the test of commutation. But what keeps two neighbouring phonemes apart in a language is the distance between the two which must be sufficient to allow the identification of a given performance as definitely one or the other phoneme and actual experience shows that the speaker of a language is rarely in doubt about such an identification. This may be called the margin of security of the phoneme which serves to ward off any attempts at mutual infringements. A shift is thought

as the deflection of a phoneme beyond the ordinary limits of its range leading to a break-through across the margin of safety and exerting pressure on the other phoneme. This may lead to a two-fold result : either the phoneme whose area is invaded by the deflected unit may try to preserve the margin of security and shift itself further away in the same direction and thus change. A phoneme like *o* pushed by a sound like *ɔ* may move in the direction of *u*. But this shift may itself set the next phoneme in motion and there may thus start a kind of chain action, here called a push-chain. Or the phoneme may not find it possible to move away and ultimately there may result a merger of the two units. On the other side, the space vacated by the original phoneme in its shift may produce a kind of a vacuum in the phonemic space and exert a kind of a pull on the next phoneme adjacent to it. So the other phoneme is thus attracted out of its original orbit, and a kind of another chain-action called a pull or drag chain may start. Both these chains may modify the phonemic system and reshuffle it. It is emphasised that it is not always easy to distinguish between the push-chain and the drag-chain and much depends upon the initial deflection of the phoneme, the real cause of which remains as yet unascertained.

While such shifts are easily understood and explained on the basis of the natural tendency of a language to preserve its oppositions as far as possible by keeping the distance between phonemes intact, the reason for the merger of two phonemes in a language is more difficult to grasp. A purely phonetic explanation of the variation from the norm and even the shifts of the norm would not do ; because all impending cases of merger would be strongly counteracted by the desire to keep the opposition intact. MARTINET suggests that such mergers are primarily due to the weakness of the opposition involved. If the functional load of the opposition is not very great the speakers may accept than reject such a merger of phonemes. There are various ways by which this load can be measured but most of them are not sufficiently accurate to give us the power of predicting the merger of any two given phonemes. The measuring of such loads in case of ancient languages is much more difficult and hence our inability to know beforehand which of the phonemes would merge at a given time and place. Two reservations can be made : we need not assume that two neighbouring phonemes will necessarily merge simply because the functional yield of their opposition is nil. Secondly, when a merger is impending in case of an unimportant functional opposition, the speakers of the language have always at their disposal other means to remedy the inconveniences, like semantic extension, word-composition and morphological re-arrangement.

In dealing with changes due to structural conditions, MARTINET starts with the view that what changes is a distinctive feature of articulation, the distribution of which builds the phonemic structure of the language. Consonants form series when they are characterised by the same articulation, if their other characteristic articulations are located at different points along the air channel like *p, t, k*, etc. They form an order when they are characterised by the same articulation at the given point in the air-channel, but are distinguished from one another by some other relevant articulation, as when *p, b* and *m* form a labial order. In the case of vowels he distinguishes between a series like *i, e* all being front or *u, o, ɔ* all being back and order like *i, u*, which are both high, or *e, o* which are mid or *a* which is low. Both the series and orders are opposed to each other and a number of pairs showing the same type of opposition, presupposes a larger unit called a correlation; as, for example, the correlation of voicing between pairs like, *f, v, s, z* and *š, ž*. When two or more correlations run parallel, they form a correlation-bundle, when we find such parallel correlations as voicing, aspiration etc. in Sanskrit between *p, ph, b, bh, t, th, d, dh, k, kh, g, gh* and so on.

A phonological shift pertains primarily to the distinctive feature and only secondarily the phoneme possessing it. This is seen empirically in languages where we find if an intervocalic *p* becomes voiced into *b*, the *t* and *k* also do the same. The stability of the structure is based on two major considerations: the functional yield of a correlation and not merely the functional load of a pair of phonemes, and the frequency of its occurrence. Linguistic features which recur frequently in the chain are likely to be learned earlier and remembered better than those which appear less often.

A phoneme which is integrated in a correlation is better protected and more resistant than a phoneme which is not so integrated, to which he gives the name of 'marginal'. It is naturally subject to erratic displacement until such time as it gets integrated into a correlation in the course of its deflections or variations, and this is what we mean by filling in the gaps or holes in a phonological system; and it is due to what may be called pattern attraction. The theory of pattern attraction could be summarised by stating that the phonemes of a pattern tend to be as fully integrated as conflicting factors make it possible. This ultimately results into a merging of two articulations which do not serve any purpose. Of course, the degrees of integration and isolation are different for different phonemes and allow a good deal of latitude

for such integration of un-integrated or insufficiently integrated phonemes. The working out of this principle should ultimately lead to a state of perfect stability which will only be an ideal situation. Hardly any language attains it. A number of possible reasons are suggested. A perfect integration may make the margin of safety between phonemes extremely thin and hence a source of disturbance. The different sub-systems of the language may not show the same kind of integration. The system of long vowels in Sanskrit differed from that of the short vowels and the system underwent a modification in the Middle Indo-Aryan. A language often comes in contact with other dialects or languages and an external push disturbs the symmetry. All such considerations account for the never-ceasing phonological fermentation that can be observed practically everywhere. As an alternative to the filling of holes in the pattern, MARTINET suggests the idea of a catalyst, a phoneme which may be very meagerly represented at the beginning by some random borrowing from another language, but which may absorb another phoneme of greater frequency because it is less integrated in the structure.

Finally we may briefly consider the question of Internal Reconstruction, a methodological addition to historical linguistics due to the structural way of analysis. In the synchronic studies, the comparison of the allomorphs brought out the fact that their phonemic relations can be concisely stated by means of a morpho-phonemic unit being set, particularly when these differences are due to regular phonemic changes. Even if all morpho-phonemic statements may not reflect actual historical facts, many of them do so and give us a means of reconstruction. An alternation like an IE root *g'enə/gnē* can be set up in a morpho-phonemic form as *g'enē* as was done by HIRT and a rule may be stated that either the one or the other vowel alone shows a full grade form, giving us the actual forms recorded. This rule can be simply imagined as a convenient mode of statement implying no historical validity, which is the view of most IEISTS, or may be considered as an historical stage of earlier date as HIRT did. In an alternation like *duh—dhuk*, we may set up a morphophoneme *dh-* which developed into a *d-* when an aspirate followed it, and this is considered as a fact of historical change. Internal reconstruction thus proves to be nothing but a historical interpretation of some of the morphophonemic rules of the synchronic analysis.

This type of reconstruction is based on the fact that allomorphic differences are due to phonemic changes, and that such changes leave

behind traces in the structure of the language. Some of these traces are of a regular type, making it possible for the investigator to reverse them and recover the original pattern which gives us the reconstruction based on internal evidence alone. A close classification of the phonemic changes from the point of view of their structural effects, would give us the procedure of this type of reconstruction. A few general conclusions have been already arrived at and the method is now definitely an addition to the procedures of historical reconstruction.

Phonemic changes can be viewed as involving a redistribution of allophones based on phonetic similarity, which allows us to reconstruct the morphemic unity of the earlier period, but according as one or the other allophone will be assigned to a different phoneme than the original, it will not be recoverable. Such a situation is likely to involve a case of neutralisation and the phonetic identity of the original phoneme cannot be ascertained. This is the situation in the much-discussed Gothic alternation between θ and t . It is worth noting that when an allophone merges with another, it cannot be recovered with the help of internal reconstruction. Because Gothic t has merged with t coming from IE d , we cannot decide whether the original phoneme was t or θ and after fricatives there was no contrast between the two.

In cases of complete merger or complete loss, IR has no scope. The structure shows no trace of such changes and hence no inference can be drawn from them. There is no alternation left. But if the phoneme merges with two others under different conditions an alternation is possible but it will be irregular because both the allophones have merged with different phonemes. Thus Sanskrit *gāyati* alternates with *gīta* but it is not regular. In case of partial merger a split is involved. The alternation will be one way automatic if no other change intervenes and we can recover the original position by internal reconstruction. Thus Sanskrit $d \sim t$ in words like *śarat* and *śaradā* can tell us that the final phoneme was d . In these cases the phonemes of restricted distribution is clearly the original. So the partial merger is with zero, zero naturally merges with other zeros and the other phoneme alone can be recovered if it has not merged. If other changes make the alternation here non-automatic, it may still remain regular in one way and by applying reconstruction to the other alternation we can recover the automatic nature of the first alternative and get the original phoneme by IR. This also indicates to us the relative chronology of the changes. With phonemic split the IR becomes more difficult. A split due to borrowing

or analogical extension cannot be reconstructed unless the borrowed elements and the analogical forms are detected and set aside. This would require other evidence. If the split is due to the merger of the environment, what we can recover is the phonemic unity, but no specific phoneme can be identified. But this is no gain insofar as the theory of IR presupposes the phonemic identity of the alternation in its original form.

We may summarise the effects of structural approach on historical linguistics by pointing out that it has contributed to the clarification of a number of situations by terminological refinement, has introduced a few fruitful concepts in the study and has added the method of internal reconstruction to that of comparative reconstruction, both of which are further refined by a rigorous codification.

III

THE COMPARATIVE METHOD AND INDO-IRANIAN RECONSTRUCTION

THE central position of the comparative method in historical linguistics has been recognised all along its history. When the comparative reconstructions were added to the intuitive feeling of the linguist for the relatedness of languages scientific historical linguistics came into existence. Such particular triumphs of the comparative method as the discovery of the effect of the IE accent on the Germanic sound-shift, the postulation of the vocalic sonants in the Proto-IE, the discovery of the lost phonemes in the long vowels of the IE by DE SAUSSURE and their identification with the Hittite h by KURYLOWICZ, the confirmation of the labio-velar stop series by the Mycenaean Greek and many others gave it the prestige it possesses. The method was used all the days but its rigorous formulation had to wait the use of the structural methods, first in the field of descriptive analysis and then in historical studies. In fact the method proves to be in all essentials the method of descriptive analysis applied to historical and comparative material taken from related languages, and we owe this discovery to H. M. HOENIGSWALD, who was the first to attempt its formulation and show its basic unity with the method of phonemic analysis in synchronic work. That the results of sound change behave like allophones is due to the fact that sound changes take place through the positional variants of the phonemic units. Descriptive analysis is essentially a telescoping of the growth of a language system while historical development is a kind of drawing out of the structure of language along the axis of time.

The comparative method in historical reconstruction can be best viewed as a series of steps which the linguist takes, one after another, in order to arrive at the end result, the recovery of the sounds, forms, constructions or the words of the Proto-language, with the use of the material available in the descendent languages. He has to pick up related languages by observing the similarities found in them, then collect together sets of correspondences mostly of phonemes, find out which of them are partially similar or alike, ascertain their distribution in the compared languages, combine the phones set up for each correspondence into phonemes on the basis of their contrastive or non-contrastive distribution and choose out of the alternative groupings that one which is most economical. It is suggested that an identical

procedure can be used for units bigger than the phonemes like grammatical categories and constructions, though the matter is not worked out in detail. What is mostly reconstructed is the phonemic shape of the morphemes and in some cases their semantic contents, though the evidence for the latter will mostly be non-linguistic.

Each one of these steps gives rise to some problems and needs careful consideration. Similarities in any two languages may be due to any one of the five different causes. It may be caused by mere accident which varies according to the simplicity or complexity of the item involved and the range of choice which the material affords. The more complex the item the less likely is an accidental similarity. A Kannaḍa dative *-ke* may be accidentally similar to Hindi dative *-ko*; but the similarity between Hindi *iktālīs* and Marathi *ekēālīs* cannot be due to mere chance. When there are only two possibilities of using an adjective before or after a noun, any two languages may hit upon the one or the other method with great accidental probability as in Arabic *bustānun kabīrun* 'a big garden' and French '*le jardin grand*'. When there are hundreds of combinations of phonemes available to express an idea like 'belly', that Hindi chooses *pēt* and Marathi *pōṭ* cannot be merely accidental. The more unusual and rare the item, it is less likely to be accidentally similar than a more frequent and common one. Any two languages may possess the apical stops but only a few have the clicks used as regular phonemes in the system. Similarities may be due to a kind of resemblance between the sound of a morpheme and its meaning called symbolism or elemental similarity. This has, however, a tendency to cluster round words of particular connotations or of emotional background. Such are nursery words, imitative names and interjectional forms. Such similarities are not likely to be met with in other parts of the language. A third source of similarity is what is called parallel developments. Two languages may show similarity due to the fact that both of them have developed along the same lines and naturally show similar features. Thus Hindi has replaced the threefold distinction of genders of the OIA by a twofold one into Mas. and Fem. and so has French replaced the three genders of Latin by the same two genders. Thus French is similar to Hindi as say German is similar to Marathi or Gujarati in possessing three distinct genders. But such a similarity has two aspects worth consideration. In the first place such parallel developments presuppose some kind of similarity at the earlier stages of these languages which is most likely to be of a genetic type and on the whole the development of new traits in common are much smaller than the loss of original common traits. Secondly such similarity is indicated by the nature of the material itself, either an analogical

extension or some feature of grammatical structure, like the development of compound tenses in many IE languages. This type of similarity is not likely to show either similar or identical morphemes between different languages. French forms its feminine differently from Hindi and the distribution of items in the three genders of German is not likely to agree with that of Marathi or Gujarati. However, what is important for the genetic relationship is not the fact that both show the three genders but that the items among them agree to a remarkable extent. Another source of similarity of a very common occurrence is due to borrowing. There is hardly any language which has not come into contact with others and has not borrowed from them to some extent. Now the different aspects of the structure of a language are prone to be borrowed to different degrees and the most usual borrowings pertain to cultural words. In this case the phonemic material of the morpheme is borrowed and is either treated by sound-substitution or is straightway incorporated in the language. In the second case the similarity is likely to be of a different nature than that due to words which are inherited from a common origin and hence subject to detection. Even when sound-substitution occurs and no foreign phonemes are seen, the substitution of the nearest phonemes is likely to violate the correspondences of the phonemes as found in related languages due to the preservation of the original stock of morphemes, undergoing natural but divergent developments in the sister languages. If a/p/ of Marathi /pāy/may correspond to an/f/in English foot, the borrowed word shows a /ph/in/phūt/ 'for a measure of length'. No one borrows a sound or a grammatical inflection, but morphemes, words and phrases and only indirectly through them a sound or a termination may creep in into the borrowing language. When all these sources of similarity are eliminated, there remains the only source of such similarities of a regular and extensive type namely the presence of inherited material from the parent language, which helps the linguist decide on the related nature of the languages under investigation.

Looked at from the point of view of language structure we may say that similarity of a mere sound or sounds or of meaning has no value in this context. Both of them are determined by the nature of the material used in language-building and the similarity in the outside world and its experience. What is needed is a similarity of both form and meaning at the same time, which comes to mean similarity in the morphemes in the two languages. This is the more striking because there is no natural connection between a form and its meaning and between one morpheme and another. Moreover the possibilities in this direction are so great that they virtually rule out accident or chance. Again a regular correspondence between recurrent phonemes

in related morphemes sufficiently ensures against chance, borrowing and symbolism. Still more important is the morphophonemic alternants among allomorphs of two languages. If they are regular they may be partly due to later analogical formation but their initial stage must be due to common inheritance. If they are irregular or unique their value for historical connection is still greater and probably they are the most convincing evidence of genetic relationship. Hindi *jātā* and *gayā* and Marathi *jāto* and *gelā* are strikingly similar in such formal relation that it can hardly be due to anything but common origin. Next comes similarity in the inflectional and derivational material in a language and if it is irregular and different from the normal pattern it either comes from inheritance or is a borrowed feature like English *foot* : *feet* and *datum* : *data*. In the lexical material the basic vocabulary is less subject to replacement and the longer and more complex the item it has a better chance of being due to inheritance. Even a construction may indicate a common relationship if it is peculiar (German *Treulosigkeit* English *faithlessness* but French *infidélité*). Above all similarities extending over more than two languages make the possibility of factors other than common origin very unlikely.

When cognates are collected, it is useful and probably necessary to put them in a phonemic shape. As written records are usually phonemic this is not likely to produce difficulties in many languages but if the writing is of a different type like say the Hittite or Old Persian an interpretation may be necessary before the phonemic shapes of the morphemes are ascertained. Even in such good alphabetic writings as Latin, many features like the length of the vowels must be interpreted before the method can proceed smoothly. Here naturally a question arises. Can we draw up the sets of correspondences with the allophonic shapes of morphemes or will it result into some kind of wrong results? Because the basic procedure to be followed is the same as in phonemic analysis, no real difficulty should arise even if we work with the allophonic shapes. But it is likely to result into greater complications in the procedure and probably the process will have to be often repeated. As long as the conditioning factors of the allophones are present in one or the other language or both, the sets will soon fall into complementary distribution and will be combined into the same unit at each stage. By a comparison of Marathi and Hindi, if sets are formed as *ḍ/ḍ̌*, *ḍ/ṛ* the complementary distribution of the Marathi reflexes *ḍ/ṛ* will be evident and only one phoneme will have to be set up, with the result that a split occurred in Marathi [*r*] intervocally and [*ḍ̌*] elsewhere. That they now prove to be allophonic will be of no great concern. If we build up sets of the high vowels in Hindi and Marathi we may get pairs like *ī/ī̄*, *ū/ū̄*, *i/ī*, *u/ū*, *ī/ī̄*, *ū/ū̄̄* and *ū̄/ū̄̄* as in *bij* : *bī̄*, *mūl* : *mū̄l*, *gilnā* : *gī̄l̄nē*,

kuttā : kutrā, bahñ : bahñ, pul : pūl, kiḍā : kiḍā, pūrā : purā. Now the syllabic structure will decide where the sets with Marathi short or long vowels will occur and we need set up only four vowel phonemes here as i, ī, u, ū and not eight. The statement of the changes will point out that both short and long vowels have become short and long according to the place of the syllable in the monosyllabic and polysyllabic words in Marathi and it will be a matter of further phonemicization to reduce the data to its proper phonemic system.

Another question which arises in this context pertains to the different ways in which a phonemic analysis of a language can be carried on and the choice it leaves to the linguist in building up his sets of correspondences. The question is whether such alternative ways would affect the working of the comparative method. As an example we may compare Assamese with Hindi as regards the aspirated stops on the supposition that they are treated as unit phonemes in Hindi (written p', b', t', d', etc.) and as clusters of stops with h in Assamese (written as ph, bh, th etc.). When we compare a pair of words like Assamese *phul* and Hindi *p'ūl* we set up a correspondence like p/p' and another like p/p from a pair of words like *pat : pattā*. But we will have to set up another correspondence as well and the next one will be h/ϕ the third u/ū etc. It is easy to show that p/p' and p/p are in CD the one occurring before h/ϕ, the other never before this set. If we set it up as a phoneme/p and the next one as h/our reconstruction may appear as phūl and no difficulty would arise. But it is equally possible to take it as a phoneme p' and the next one as h which will give us the reconstruction p'hūl which is unusual. But if this is so, the reconstruction of the other word in a pair like *pānī : pani* will give us p'ānī which means the contrast between p and ph is now represented as p' : p'h which is a mere difference in notation. Of course no reconstruction is going to give us the exact phonetic make up of the original word.

The next step in the method is to compare the various correspondences between the two languages. Comparing a number of Hindi and Marathi words like *kamal : kamāl, phal : phāl; pital : pitāl* and a host of others we set a set of correspondence Hindi l/Marathi ḷ and comparing words like *chal : sal; bail : bāil; gal : gal, kal : kal* etc. we set up another correspondence like Hindi l/Marathi l. These are considered as partially alike or similar in that they have the same phoneme in one of the two languages, in this case Hindi which shows l in both although Marathi has two different phonemes l and ḷ. It is obvious that if the components in both are the same, they prove to be the same correspondence like Hindi medial l and Marathi medial l; *halika : hālka; calnā : cālne* etc. The result is that the set l/ḷ now gets a wider distri-

bution, occurring both finally and medially. If both the languages show a difference it is equally obvious that it is a different correspondence which has very little to do with the earlier ones except in rare cases. In the present case the correspondence Hindi l/Marathi l comes from an earlier MIA ll and the other one l/l comes from a single l in the MIA or Prakrit stage. If we compare Bengali with Assamese we can set up a number of sets in their consonantal systems like Assamese r/Bengali r; Assamese r/Bengali ɖ; Assamese s/Bengali čh, As.s/B.č.; As.t/B.t; As.t/B.ɖ etc. which are similar to each other. Sometimes, however, we come across a situation where we get sets which do not show any partial similarity even when we know that they have come from the same original proneme, which thus reveals a defect in the procedure. We may compare for this purpose Assamese and Marathi and set up three correspondences (1) As.h/M.s as in *kvpah/kapūs*; *manuh/manūs*; (2) As.x/M.s : as in *xap* : *sap*; *xahu* : *sasū*; *xahur* : *sūsra*, *xakol* : *sagle*, *xat* : *sat*; (3) As.x/M.š : as in *xin* : *šing*; *xelai* : *ševal*; *xi* : *sivne* etc. Here the first is similar to the second because both show an s in Marathi and the second is similar to the third for both have x in Assamese. But the first is not similar to the third and these two may not be combined into one unit. Actually (1) is found finally, (2) is found before the back vowels and (3) is found before the front vowels and all three go back to the original phoneme s. This difficulty can be overcome by first combining sets 1 and 2 and setting up a phoneme s for both and having a correspondence s/s which will occur finally and before back vowels. This can be now combined with the third set into the same unit because now it shows partial similarity in having an s in both. If we compare the dental stops in Sanskrit and Greek we can get the following sets : Gr. t/Skt. t; Gr.d/Skt.d; Gr.th/Skt.dh; and Gr.t/Skt.d. Of these the first and second are in contrast, but the third and fourth are not. The 4th occurs only before a following aspirate but the 3rd does not occur there. But these two sets do not show any partial similarity to be put together. But in such cases we may regard the distribution to be of primary importance and the phonemic similarity as of secondary value, a situation which often occurs in the phonemic analysis of the synchronic type. Some difficulty may be also faced in setting up correspondences between two languages, when one shows a suprasegmental phoneme to correspond to a segmental phoneme of the other. Thus when we compare Hindi and Panjabi we may get pairs like *ghoḍa/kōḍa*; *dha:tu/tāt*; *bahin/pēn*; *dhobi/tōbi*; *dhu:l/dūd*; *bhu:ra/pūra*; *dhona/tōṇa* etc. In Panjabi the aspiration of the initial voiced aspirate is lost and its place is taken by a falling-rising tone on the following syllable. We can either set up correspondences like gh/k; φ/Δ V/V or gh/kΔ; V/V; etc. But a simpler way would be to set correspondences like g/k and h/Δ between the two languages. A

rephonemicization for comparison may be necessary in such cases, but they offer no insurmountable difficulties in the way of the method, as claimed by some.

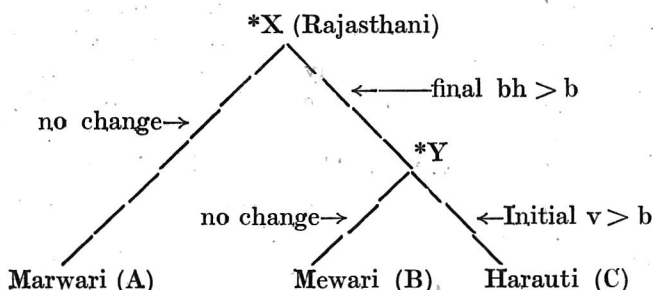
Once the sets are put up we assign a single allophone to each separate set that is found and then treat them for the purpose of phonemic grouping so as to build up the phonemic system of the parent language. The usual method of synchronic analysis is followed. Sets which are found to be in CD are regarded as coming from a single phoneme while those which contrast in one or more environments are considered as coming from different phonemes of the mother language. The entities being sets, their environments must be also stated in the form of sets which follow and precede it. Thus comparing Hindi *ha:th* with Marathi *hāt* we set up a correspondence like *th/t* and its environment will be the sets which precede and follow it; in this case *a:/a* and *pause/pause*. The environments will be considered as the same if the sets are identical, but if they show a difference in any one of the languages they will be considered as different, and in a non-contrastive distribution. More generally we may say that two environments A/B and C/D are in complementary distribution if they have nothing in common or if one pair has one element the same the other must be different. Otherwise they are in contrast. This means in effect that if only one language has kept the original distinction between the environments of the allophones in the parent language and the other language has lost it, the comparative method will be able to retrieve the difference and correctly postulate the original phonemic unity. This is what happened in the case of the Germanic languages, where the voicing or unvoicing of the medial fricatives depended on the absence or presence of the accent on the preceding syllable, a distinction which was lost in the Germanic itself but was preserved in Sanskrit.

The procedure of setting up the phonemes of the parent language on the basis of economy where alternative possibilities exist can be best considered by looking into an objection raised against the method on this account.

Dr. W. S. ALLEN has taken objection to the comparative method on the ground that the grouping of the reconstructed allophones derived from the sets of correspondences in the daughter languages into the reconstructed phonemes of the mother language often contradicts the distribution of the allophones of the phonemes of the daughter-languages. To illustrate this situation he takes up a small part of the consonantal system of a few Rājasthānī dialects, namely the labials *b*, *bh* and *v*. An extended examination of his example is likely to

focus attention on some of the important steps in the comparative method and hence is worth attempting.

To make the situation as clear as possible it is better to begin with the historical facts and then try to observe how the method deals with them. From the data given by ALLEN it is clear that the common Rajasthani has three phonemes *bh*, *b* and *v* which occurred both initially and medially (which position becomes the final one in the modern languages and hence is indicated as such). The Marwari dialect (A) keeps them in tact, while both Mewari (B) and Harauti (C) change them to some extent. Both Mewari and Harauti have merged the final *bh* into the final *b* and in addition Harauti has merged the initial *v* into the initial *b*. Thus Mewari has the phones : [bh- —] [b- -b] [v- -v] and Harauti : [bh- —] [b- -b] [— -v]. For a comparison of three languages in such a condition we can picture the interrelation as follows :



ALLEN phonemicizes the phones of Mewari as /bh-/ [bh]/b/[b- -b] and /v/[v- -v] and of Harauti as /bh/ [bh- -v] and /b/[b- -b] which is the most natural thing to do synchronically. The Marwari and Rajasthani system would be /bh/ [bh- -bh]/b/[b- -b] and /v/[b- -v]. In Harauti final -v is phonemicized as /bh/ because the original final -bh has merged with final -b and initial v- has merged with initial b-. This fills the two gaps neatly. In Mewari the merger of -bh and -b leaves a gap in the distribution of the phoneme /bh/ which cannot be remedied. ALLEN shows that a reconstruction based on BC gives us a system which conflicts with A and *X in so far as its final /bh/ includes phones like Marwari [-v] and Mewari [-v] instead of including Marwari final [-bh]. Of course the addition of the missing final -v and the resulting difficulty is irrelevant.

The real question is whether the method of comparative reconstruction can detect the different synchronic groupings and restore the original one and if so with the use of what additional criteria. Let us

put together and number the phonemic correspondences of the three languages.

Raj. X	Marwari A	Mewari B	Harauti C
1. bh-	bh-	bh-	bh-
2. -bh	-bh	-b	-b
3. b-	b-	b-	b-
4. -b	-b	-b	-b
5. v-	v-	v-	b-
6. -v	-v	-v	-bh [v.]

If we now follow the usual rule of multiple reconstruction and if the scheme suggested above about the interrelation of the three languages is correct, we should get a reconstruction *X by comparing A with B or A with C; but we should get a different reconstruction *Y if we compare B with C. A comparison of A with *Y should again give us *X and if this can be achieved with reasonable arguments the method may be said to stand the required test.

A comparison of A with B gives us the following sets :

A	bh-	-bh	b-	-b	v-	-v
B	bh-	-b	b-	-b	v-	-v
	1	2	3	4	5	6

The most reasonable groupings are : 1, 2 = *bh, 3, 4 = *b and 5, 6 = *v which is the expected system of Rajasthani *X. The only other grouping possible 2, 3 will give us four phonemes which is uneconomical and must be rejected (2, 3/5, 6/1/4/).

A comparison of A with C leads to a greater number of possibilities. The sets are :

A	bh-	-bh	b-	-b	v-	-v
C	bh-	-b	b-	-b	b-	-bh
	1	2	3	4	5	6

The three possible reconstructions are (I) 1,2 = *bh, 3,4 = *b, 5,6 = *v which agrees exactly with the earlier one and is the same as *X. (II) 1, 6 = *bh, 3, 4 = *b, 2,5 = *v showing partial similarities (III) 1, 6 = *bh 2, 3 = *b, 4, 5 = *v showing also partial similarities. That II and III have to be rejected in spite of the multiple complementation and partial similarity follows from the considera-

tion of economy. We should admit that reconstruction as valid which leads to the postulation of the least number of changes from the mother language into the daughter languages. The reconstruction I postulates that language C changed final bh to b, initial v to b and final v to bh (the last a mere matter of phonemicization), on the whole three changes. Reconstruction II postulates that language A changed final bh to v and final v to bh and language C changed final v to b and initial v to b, on the whole four changes. Reconstruction III postulates that language A changed final bh to v, final b to bh and final v to b, while language C changed final v to b and initial v to b, on the whole five changes. Naturally the first reconstruction is to be accepted as involving the fewest changes.

A comparison of B and C gives us the following sets :

B	bh-	b-	-b	v-	-v
C	bh-	b-	-b	b-	-bh
	1	2	3	4	5

Two reconstructions are possible giving us the postulated *Y : (A) 1, 5 = *bh, 2, 3 = *b, and 4 = *v or (B) 2, 3 = *b, 4, 5 = *v and 1 = *bh. (A) postulates the changes that B changed final bh to v and C changed initial v to b. (B) postulates that C changed final v to bh (a fact of phonemicization) and initial v to b. In the case of (A) the common ancestor of BC i.e. *Y lost a final v and further B changed final bh to v, while in case of (B) *Y lost a final bh and C changed a final v to bh, clearly a case of naming the same entity as either v or bh.

Now we take the last step of comparing A with *Y to get at *X. We have reconstructed *Y in two ways called here (A) and (B). With (A) we have

A	bh-	-bh	b-	-b	v-	-v
(A)*Y	bh-	-v	b-	-b	v-	-bh
	1	2	3	4	5	6

We can group 1, 2/3, 4/ and 5, 6 which gives us three phonemes *bh, *b and *v or as 1, 6/3, 4/2/ and 5 which gives us four or 1, 6/2, 3/4/ and 5 which again gives us four. With (B) we have

A	bh-	-bh	b-	-b	v-	-v
(B)*Y	bh-	-b	b-	-b	v-	-v
	1	2	3	4	5	6

We can group 1, 2/3, 4/ and 5, 6 with three phonemes or as 1/2, 3/5, 6/4 with four. In both cases the most economical grouping gives us the

original phonemic system for the stage. *X. This is proof enough to show that the comparative method is valid and is not affected by the different ways of grouping the phones. It is emphatically not 'a pseudo-phonemic system' which is arrived at by this method.

The example further points out that the allophonic groupings of Harauti-v as/bh/ is sorted out as it were by the comparative method in view of the fact that a similar grouping is not effected in case of the sister dialect Mewari. Methodologically it stresses the importance of the principle of economy in phonemicizing the asterisked allophones into the asterisked phonemes of the proto-language, both in the synchronic sense of setting up units of maximum possible distribution and in the diachronic sense of postulating the minimum number of changes in the daughter-languages, while making a choice between alternative possibilities.

An attempt may now be made to reconstruct the phonology of the Indo-Iranian parent language with the help of Sanskrit and Avesta. Their genetic relationship is well known and needs no proof. The IE languages were the most promising field of comparative studies and the labours of a hundred years have made the main outlines of their history quite clear. The discovery of Tocharian and Hittite, both cuneiform and hieroglyphic, and the still recent discovery of the Mycenæan Greek have merely added to the complexity of the problem but have in no way disturbed their relationship as such. There is yet a sharp difference of opinion about the sub-grouping of the IE languages but one family, the Indo-Iranian, is considered by all as forming a real sub-group in the larger family of IE languages. This is due to the great similarity between Sanskrit on the one side and Avesta and Old Persian on the other and the close connection between the religions, customs, literary forms and general cultural traits represented by the Vedic and Avestan civilisations and also by the use of the common name Arya by both the ethnic groups. Hence there is no doubt that the tribes which later occupied India and the Iranian plateau once lived together and developed a common culture which explains the formation of a common language like Indo-Iranian. No documents of this form of speech are left over to us and the earliest traces of this branch are found scattered in the written documents of the Middle East, the Hittite writings, the Amarna letters, the book on horse training attributed to Kikkuli and numerous proper names which are either Indian or Iranian, but not unambiguously Indo-Iranian. Hence a reconstruction of this speech has its own interest.

The relationship among the branches of the Indo-Iranian are also fairly clear. The Indian branch is mainly represented by the Vedic

Sanskrit with a possible suggestion of another dialect which may have contributed to the formation of later Sanskrit. The Iranian branch is represented by two divergent languages, Old Persian and Avestan. Only uncertain traces of the Median dialects are known. The languages of the so-called Dardic group are all late and primarily belong to the Indo-Aryan group with a strong influence of the neighbouring Iranian languages. They add little to the reconstruction of the Indo-Iranian as such.

Ample material is available both for Sanskrit and Avesta and a comparison between the two according to the method outlined above should make it possible for us to reconstruct the Indo-Iranian sound system with fair accuracy. The initial step to be undertaken should concern the phonemic systems of these two forms of speech. The phonetic material available for Sanskrit, based on the excellent observations of earlier Indian phoneticians and grammarians, is both accurate and sufficient to arrive at a fairly good phonemic system. The script in which the language is traditionally handed down is almost phonemic and in some cases records greater phonetic details which are valuable and make the phonemic analysis easy. LEUMANN's objection against the phonemic approach to Greek and Latin on the ground that it adds nothing to the alphabetic statement, is not valid in case of Sanskrit and Avestan and such a preliminary analysis will simplify the picture to some extent.

The Sanskrit vowel system can be represented as follows :

Simple vowels	i ī	u ū
	e	o
	a ā	
Diphthongs	ai	au

The remaining vowels \bar{r} and \bar{l} are of doubtful phonemic value. In most cases \bar{r} and \bar{l} act as allophones of r and l while \bar{r} is limited in occurrence and is of analogical development. But a form like *nir-ṛti* makes it difficult to interpret \bar{r} as an allophone of r unless we set it up as $/rr/$ as there is no geminated r in the language.

At an earlier stage even i and y and u and w were in complementary distribution but have ceased to be so even in the early stage of Sanskrit. The same is true of e and ay and o and av . A few loans like *toya* have disturbed the pattern. A form like *avigaṇayya* makes it impossible to consider i and y as allophones and a contrast between *uraḥ* and *vrāta* makes u and v different phonemes. ay and e contrast in *jeya* and

jayya, as do *toya* and *-tavya*. Mostly *r* and *l* occur between consonants or consonant and pause, while *r* and *l* occur between vowels or vowel and pause. The same is true of *i*, *y* and *u*, *v*. *E* and *o* occur before consonants while *ay* and *av* occur before vowels.

The consonantal system of Sanskrit may be represented as follows :

p	t	ṭ	c	k
ph	th	ṭh	ch	kh
b	d	ḍ	j	g
bh	dh	ḍh	jh	gh
m	n	ṇ		ṅ
	s	ṣ	ś	h
	r			
v	l		y	

Of these the palatals *c*, *ch*, *j* and *jh* were originally stops but in the historical period they have become affricates. *Jh* is found only in few words of Prakrit origin and imitative words, while *ch* acts as a cluster except after a long vowel and initially. In the Vedic dialect of one type (represented by RV) *ḍ* and *ḍh* have two allophones *ḷ* and *ḷh* between vowels and *ḍ* and *ḍh* in other places. The palatal nasal *ṅ* can be considered as an allophone of *n* occurring only before palatal stops. Other nasals contrast in the final position. As compared to the labials, dentals and velars, the distribution of the palatals and retroflex stops is defective in some ways. */h/* may be said to have two allophones : *[h]* before pause or before voiceless stops and *[ḥ]* in other places.

We must further set up the suprasegmental phonemes of nasalisation */~/* extra length */3/* (traditionally called *pluti*) and one pitch phoneme */ˈ/* called *udātta*. Setting up a juncture */+ /* will simplify a lot of alternative forms in external Sandhi.

The writers of the *Prātiśākhya*s give us many phonetic units other than these, like nasal stops of short duration, nasal vowels before nasal stops etc which appear to be only of allophonic nature.

The phonemic analysis of Avesta is more difficult and in some cases uncertain. The tradition of the transmission is less reliable and we have no evidence about the sounds of the Avestan phonemes. The following is a tentative attempt at an analysis useful for comparative work.

The vowel system may be sketched as follows :

i	i	u	ū
e	ē	o	ō
	ə ̄ə		
		ṁ	
a	ā	ā	

Diphthongs :

aē(ōi)	ao (̄əu)
āi	āu

It is difficult to prove a contrast between short and long e and o. Short e occurs only in finals of polysyllabic words in YAv. *avanhe* = Skt. *avase* where GAv. shows a long vowel : *yazaitē* (cf. YAv. *yazaitē*). Long ē is found in the diphthong aē and at the end of monosyllabic words. Here there is no contrast. But in addition Avesta has changed an original a or ā to e after y and before i i e ē or y : cf. *yesne* 'in the worship' = Skt. *yajñe* ; *ayenī* = Skt. *ayāni*. They will contrast only if we consider the e developed out of a as short and e developed out of ā as long, for which the script gives no indication. The distribution of o and ō is also similar. O is found in the diphthong ao, while ō is found everywhere else, including the final position. Here, however, a short a of the original I-I has developed into a short o when the next syllable contained u and we may get a near minimal pair like *vohu* 'good' and *dāmōhu* 'among creatures'.

The vowel phonemes contrast in limited situations and roughly indicate their earlier allophonic distribution. Thus original a shows the value ə before nasals particularly finally and sometimes before -vi cf. *šavišta*. It shows the form i between y and the nasal, and of u between w and m. We have already noted its change to e and o. But ə is to be regarded as a separate phoneme because allophones of i, u, and ɾ have merged in it. E is a distinct phoneme from a as can be seen from the contrast *daēna* and *daēne*. The same is true of i, u and o.

We may consider the graphic əɾə as the phoneme/ɾ/ as is often done. Following KURYLOWICZ if we set up a stress phoneme in Avesta we can consider such pairs as ə, ̄ə, aē, ̄ōi, and ao ̄əu as allophones of each other, one being the stressed and the other unstressed form. But the evidence is meagre and it may be safer to posit them as separate phonemes.

The consonantal system can be set up as follows :

p	t	č	k	
b	d	ǰ	g	
f	θ		x	x ^v
w	ð		ɣ	
	s	š		
	z	ž	h	
v		y		
	r			
m	n		ṇ	

/t/ has an allophone t which may be voiced or voiceless and fricative which occurs finally and initially before k and b./h/ has a more palatal sound h^{*} before y and the same is true of /ṇ/[ṇ^{*}]. The nasal stands ṇ for n before t, d, č, ǰ for ṇ before k, g and for m before p, b and has no separate phonemic status. /r/ has a voiceless allophone written as hr before p and k. The real difficulty pertains to the three palatal sibilants which the script distinguishes. Š is used before k, č, t, p while ś is written before y and š in other cases. It may be provisionally regarded as one phoneme/š/. Lastly Avesta shows two epenthetic vowels i and u. They are predictable in the light of the following syllables. Thus i is found before dentals, labials, n and r when they are followed by i i y and e ; *aibi*, *aⁱpi*, *aⁱryō*, *i^rista* etc. U is found before r when followed by u or v : *dāuru*, *pouru*, *uruḍəm* etc. It is best to regard them as indicating a palatal and a labial quality which belonged to the consonants and consider them to have two allophones, a palatalised one before i, i, y and e and in case of r a labialised one before u and v. Thus r has three allophones [r] [r^{*}], [i^r], while others like t or p have two [t] [t^{*}] [p] [p^{*}] etc.

In theory it may be necessary to put together all the recurrent correspondences between the lexicons of the two languages and then ascertain their distributions vis-a-vis each other. In practice we need take a few correspondences together which are likely to show a complementary distribution, a procedure which is usually followed in synchronic work as well. Taking up the vowel phonemes in Sanskrit and Avesta we may discover the following recurrent correspondences and form so many sets. For the sake of brevity only one example may be included:

- | | |
|-----------------|--|
| 1. Skt. a /Av a | asti / asti |
| 2. Skt. a /Av.e | rocayati/raočayeiti, yajñe/yesnē |
| 3. Skt. a /Av.o | vasu/vohu ; makṣu/mošu |
| 4. Skt. a /Av.ə | upamam/upəməṃ ; ayam/ayəṃ ;
avitti/əvisti |

5. Skt. a/Av.i	yam/yim ; vācam/vācīm
6. Skt.a/Av.ā	pra/frā
7. Skt. ā/Av.ā	kāmaḥ/kāmō ; nāma/nāma
8. Skt. ā/Av.e	ayāni/ayeni
9. Skt. ā/Av.ō	jīvātum/jyōtum
10. Skt. ā/Av.ā̎	mahāntam/mazāntam ; āsan/ā̎ha
11. Skt. ā/Av.a	pitā/pita ; senā/haēna
12. Skt. i/Av.i	iha/iḍa ; citra/čiṭra
13. Skt. i/Av.ī	patim/paitīm ; dhāsim/dāhīm
14. Skt. i/Av.ə	sindhu/həndu
15. Skt. ī/Av.ī	jīvyam/jīvyam
16. Skt. ī/Av.i	bhūmī/būmi ; nāri/nāiri
17. Skt. u/Av.u	putraḥ/putrō
18. Skt. u/Av.ū	nu/nū ; pitum/pitūm
19. Skt. ū/Av.ū	dūre/dūre, bhūmī/būmi
20. Skt. ū/Av.u	dasyū/dahyu
21. Skt. ṛ/Av.ər	kṛta/kṛeta
22. Skt. ṛ/Av.ar	ṛṣṭiḥ/arṣṭiṣ
23. Skt. e/Av.aē	deva/daēva ; eva/aēva
24. Skt. e/Av.ōi	me/mōi ; te/tōi ; net/nōit
25. Skt. e/Av.ē	avase/avanhē ; yajate/yazaitē
26. Skt. ai/Av.āi	mantraiḥ/maṭṭrāiṣ
27. Skt. o/Av.ao	ojas/aojō ; droghaḥ/draoyō
28. Skt. o/Av.ōu	kratoḥ/xratōuṣ
29. Skt. au/Av.āu	gauḥ/gāuṣ
30. Skt. au/Av.ō	girau/girō

For each one of these vowel correspondences we should set up a phone for the parent language on the assumption that each divergent development has a beginning in the allophonic differences of the phonemes of the mother tongue. The real problem of reconstruction lies in deciding the minimum number of phonemes which can take care of all the correspondences. This is done by phonemicizing these phones into phonemes on the basis of their distribution as either complementary or contrastive. If the sets show no phonemic similarity in either of the two languages, we naturally assign them to different phonemes. Thus sets 1, 7, 12, 15, 17, 19, 21, 23, 26, 27 and 29 are mutually different and we

have to set up a separate phoneme for each one of them. In this case we may set them as a, ā, i, ī, u, ū, ɾ, e, ai, o, au by choosing the Sanskrit symbols to represent them. Where the two languages differ we could set up, as in the last five cases, other symbols like əɾ, əē, āi, ao and āu. If we bring into consideration the other closely related language, Old Persian, we may be inclined to set them up as ai, āi, au and āu which is the traditional symbolism for the Indo-Iranian parent language. But the symbol for ɾ remains arbitrary and doubtful. It is only when we carry our reconstruction a stage back into the IE period and observe that r and ɾ were originally allophonic that we can choose the symbol /r/ correctly.

The remaining sets show partial similarity to one or the other of these sets, and we must attempt to see whether they are in complementary distribution or in contrast to decide whether additional phonemes need be set up. The first six are alike as all have Sanskrit a, while 7 to 11 all show ā in Sanskrit. But 2 and 8 are alike as both have e in Avesta. 1 and 11 are similar because both show a in Avesta and 6 and 7 are alike because both have Avesta ā. But 2 and 8 contrast because they occur in the same environment viz. between y and a following i, ī, e and y in the next syllable : *ayāni/ayenī* ; *yajñe/yesnē*, 1 and 11 contrast because both occur in the final position of polysyllabic words (cf. *ahura/asura* ; *pitā/pita*). Similarly 6 and 7 contrast because both occur finally in monosyllabic words (cf. *ca/cā* ; *ā/ā*). So these sets cannot represent the same phoneme. 1 and 6 are in complementary distribution ; 3 occurring between labials and u of the following syllable ; 4 before nasals and vi and 5 after y, i, j and a following nasal and 1 in other places. They may all represent I-I,* a. 7 and 11 are also in complementation ; 9 like 3 occurs between labials and u ; 10 before s and nt and 7 in all other places. They may represent I-I. *ā.

Sets 12, 13 and 14 have i in Sanskrit and sets 15 and 16 show ī in the same language. 13 and 15 have ī in Avesta and 12 and 16 show i in the same language. But 13 and 15 contrast (cf. *ahīm*, / *azīm* ; *patim/paitim*) and so do 12 and 16 (cf. *yadi/yezi* ; *bhūmī/būmī*). Hence they cannot be put together. 15 and 16 are in CD and constitute I-I *i. 12 and 13 are in CD and constitute I-I*i. But 14 contrasts with 12 cf. *sincati/hinčaiti* and *sindhu/həndu*. We have to set up another phoneme like ə for it. But looking at the O.P. form *hi(n)du* we may provisionally regard it as the same phoneme with an aberrant development in Avesta. Sets 17 and 18 are in complementation and so also sets 19 and 20. 18 occurs before final m and in monosyllables while 17 is found in other places. 20 is found finally in polysyllabic

words while 19 is found in other places. Hence we set up I-I*u for 17 and 18 and I-I*ū for 19 and 20.

Sets 21 and 22 are in complementary distribution. 22 occurs before š-sounds and ž-sounds while 21 is not found here. Hence they constitute one phoneme ʀ which is the common element in both these sets. Set 26 stands alone, which is I-I *āi. Sets 29 and 30 are in complementation, 30 occurs finally and 29 elsewhere. They constitute I-I*āu.

A real problem for the method is posed by the sets numbered 23-25 and 27-28. This is similar to sets 13 and 14. The traditional reconstruction sets up the two short diphthongs *ai and *au for Indo-Iranian, and postulates the following changes. I-I *ai and *au became e and o in Sanskrit, but in Avesta ai became aē medially but finally ē but also ōi both medially and finally (cf. *mē, tē* but *mōi, tōi, aēiti* but also *nōiti*), thus contrasting with both aē and e under conditions which are not known. I-I *au became both ao and ōu also under unknown conditions. The suggested condition of the presence or absence of a stress is set up *ad hoc* to account for the difference and would not work in case of the I-I change of i to ə before a nasal and a consonant and also remaining as i. If the comparative method is to be strictly followed we have to set up an additional number of phonemes say *ə for set 14 and *e for 23 and 25, *ai for 24, *o for 27 and *au for 28, which means that I-I had the same distinctions as are seen in Avesta but Sanskrit has merged them into the existing phonemes, *ə becoming Skt. i, *ai Skt. e and *au Skt. o. This brings out an important limitation of the method. A merger of phonemes generally leaves no traces in the following stage and as such requires no indication for its occurrence. But a phonemic split is always caused by some conditions present in the environment and naturally to set up a phonemic split some indication in the structure of the language either one or the other or both must be present. When no such indication is available the theory sets up a larger number of phonemes for the parent language and explains the difference between the languages as due to mergers in the other. An unconditional split in one language thus becomes a merger in the other language because the one needs a conditioning factor while the other does not. This is due to the use of the distributional criterion, contrast leading to different phonemes while CD alone can help us set up a single phoneme. We have to prove complementation while we presume contrast.

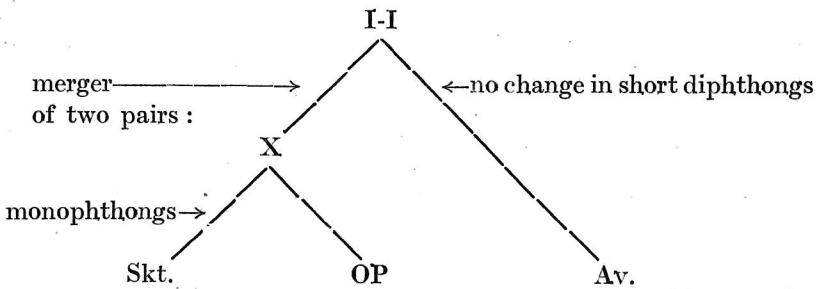
This situation is not much different from others which faced comparative grammar of IE in its early stage. SCHLEICHER admitted only a single short vowel a as in Sanskrit when other languages like Greek and Latin showed three short vowels a, e and o to correspond to it.

No conditions of the split were available and naturally no regular change can be postulated. Against this, it was shown that the diversity of the short vowels was original and Sanskrit has merged them all into a single vowel *a*, this merger requiring no conditioning. The present procedure when applied to his situation would give the same result. Sets like Skt. *a*/Gr. *a* ; Skt.*a*/Gr.*e* ; Skt.*a*/Gr.*o*. would lead us to postulate three phonemes with a merger of all three in Sanskrit.

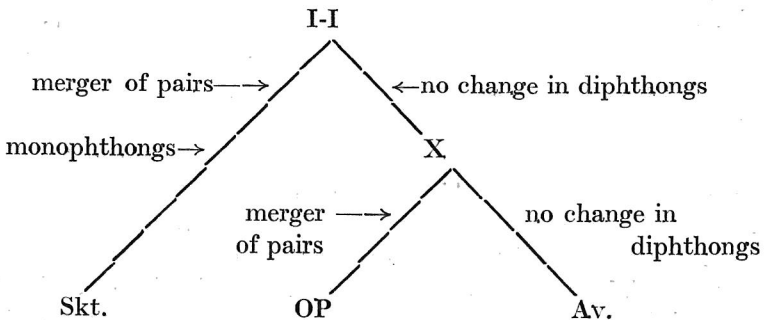
But the advantage of working out the history of a language with the use of all kinds of evidence and considerations of probabilities and possibilities, which a more formulaic and rigorous method avoids, becomes evident here. What convinces us of the correctness of one position as against another are facts like the law of palatalization which shows traces of original *e* in Sanskrit and a fair amount of regularity in Greek, Latin and other languages as regards the use of one of the three short vowels in definite correspondences. The first is obviously a matter of internal reconstruction and traces can be utilised in the comparative method by the use of morphophonemic symbols which will reconstitute the environmental differentiation even when it is lost in course of time. The second advantage is due to the additional evidence of more than two languages and this is likely to be revealed when we use the method over and over again with different pairs of languages. Ultimately it may be shown that economy in the postulation of changes in the different languages would decide which of the two possibilities should be admitted, though as mere possibilities one can well conceive two opposite lines of developments. It is also not a mere matter of number of languages involved which will decide the issue but the inherent probability or improbability of the situation to be admitted. Thus the distinction between the voiced stops and voiced aspirates is lost in many IE languages and preserved in a few only. The present method, favouring merger as it does, easily takes care of such situations. But if a larger number of languages undergo split and lose the conditioning factors, economy in changes may picture the situation as the merger in the fewer number of languages, which would be a kind of falsification of history. The method has to find out some clue in the nature of the supposed merger to detect such a defect and probably such a clue may be found in the coherence of the changes in the system as such. We may test this possibility by looking into the situation of the I-I short diphthongs in the light of the three languages, Sanskrit, Avesta and Old Persian. The facts are :

I-I	Skt.	Av.	OP.
*ai	e	aē/ōi	ai
*au	o	ao/ōu	au

A comparison of Sanskrit and Avesta has led us to postulate four phonemes provisionally set up as, *e, *ai, *o, *au. A comparison of Sanskrit and Old Persian would lead us to set up only two phonemes : *ai and *au. A comparison of Avesta and Old Persian would lead us to set up again four phonemes, the same as for the first comparison. This amounts to saying that both Sanskrit and OP have merged the two pairs of phonemes which Avesta has kept in tact. The scheme of relationship of these languages then would be

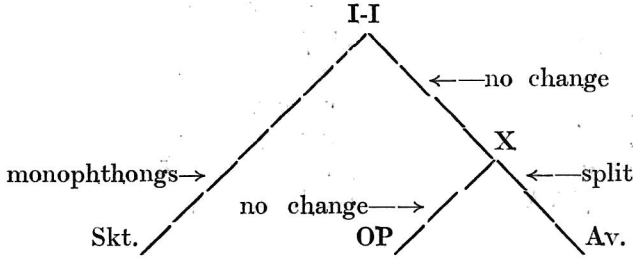


This situation admits a single act of merger and its correctness would depend upon the overall similarities between Sanskrit and OP, against Avesta. When the other aspects of the phonology are worked out, we will have to admit in a large number of cases repeated changes of identical type between Avesta and OP, which will be less economical and hence less probable. To avoid this if we modify our scheme as follows :



it becomes obvious that we are admitting the same change twice over unconnected with each other which is less economical. In the light of the whole system than we may decide that merger in a case like this is less economical and instead of admitting two cases of merger in OP and

Sanskrit we may be justified in admitting a case of split in one language namely Avesta. The resulting scheme would be :



The agreement of the resulting picture with the overall picture of the systems as wholes should decide the issue. In the absence of such a check neither the method of inspection nor the more formulaic procedure can be the wiser in such cases.

To work out the consonantal system of the I-I parent language we should put together the following correspondences between Sanskrit and Avestan consonantal phonemes. To simplify the picture, rare and unusual sets are dropped. Forms from both the Gāthā and the Younger Avesta are included. The following well-marked sets emerge:

1. Skt. p/Av.p	pitā/pita
2. p/f	pra/frā
3. ph/f	kapham/kafəm
4. ph/p	sphurati/sparaṭ
5. b/b	bāhu/bāzu
6. p/w	dipsati/diwǰaidyāi
7. b/w (Yav)	
8. bh/b	bharati/baraiti
9. bh/w (YAv)	abhi/aiwi
10. t/ð	naptar/nafəðrō
11. t/t	mātā/māta
12. t/θ	triḥ/θriš
13. th/θ	yathā/yaθa
14. th/t	sthānam/stānəm
15. th/ð	uvaktha/vavaxḏa
16. d/d	daśa/dasa
17. dh/s	idhmaḥ/aēsmō
18. d/ð (YAv)	yadā/yaḏa
19. d/θ(YAv)	viduṣi/viθuṣi
20. dh/d	andha/anda
21. dh/ð(YAv)	ardham/arəðəm

22. t/t	aṣṭa/aṣṭa
23. ḍ/ḍ	mṛḍīkam/məṛəḍḍīkəṃ
24. k/k	kad/kaṭ
25. k/x	caḥram/čaxrəṃ
26. kh/x	kha/xā
27. kh/k	skhalati/skārayat
28. g/g	gauḥ/gāuṣ
29. g/γ(YAv)	bhāgam/bāγəṃ
30. gh/g	gharmah/garəṃō
31. gh/γ(YAv)	megham/maēγəṃ
32. c/č	ca/čā
33. c/ś	cautnam/śyaoṭnəṃ
34. j/ĵ	ojas/aoĵō
35. h/ĵ	hanti/ĵainti
36. ś/š	praśnaḥ/frāšnō
37. ś/s	śatam/satəṃ
38. ch/s	chādayati/sāḍayeiti
39. j/š	-jñah/āšnā
40. j/z	ajati/azaiti
41. j/s	yajñah/yasnō
42. h/š	br̥hat/barəṣṇavō
43. h/z	vahati/vazaiti
44. t/s	vettha/vōista
45. d/z	addhā/azdā
46. s/š	drapsah/draṣṣō
47. s/h	somah/haomō
48. s/s	asti/asti
49. φ/ž	ambho-dhātam/awždātəṃ
50. φ/z	edhi/zdī
51. s/ž	uṣṭrah/uṣṭrō
52. r/ž	duruktam/dužūxtəṃ
53. r/r	putrah/putrō
54. l/r	
55. m/m	mātā/māta
56. n/n	narah/narō
57. ṇ/ṇ	pañtih/pañtanhum
58. y/y	yajñam/yasnəṃ
59. v/v	vātaḥ/vātō
60. v/p	aśvah/aspō

This data can be analysed by taking up such groups of correspondence which show partial similarity with each other. Sets 1, 2, 3, 4, 6, and 60 show either a p or an f or a ph in one of the languages and can be

considered for complementation. 1 and 2 are non-contrastive, the second occurring before a consonant, *para* but *frā*; 3 and 4 are in CD, 4 occurring after a sibilant like *s*, *safəm* but *sparat*; 60 is similar to 1 but contrasts with it, both occurring after *s*; *aspa*, *spaš*. Hence we may set up I-I phoneme as *p for 1, 2; *ph for 3, 4 and *v for 60 which last is in CD with 59 v/v and together forms this phoneme. Set No. 6 occupies a peculiar position. It is dissimilar to 3, 4 and contrasts with 1, 2. It does not contrast with either 5 b/b or 8 ph/b but is dissimilar to both. Hence it has to be set aside as something different from them. The merger of p, ph, b and bh into p before s in Sanskrit and of b and bh into w before ž (≤š) in Avesta has made straightway reconstruction impossible. But if we make use of internal reconstruction of Sanskrit it is possible to reconstitute bh in *dipsati* and then assign it to bh in comparison with set No. 8 bh/b. We thus often see the necessity of reconstructing each language material from the internal sources before a comparative reconstruction is effected with profit. Even otherwise if we reconstruct say an additional phoneme β for it, when the whole system is worked out, it may be found that this β stands in morphophonemic alternation with Skt. bh and thus reveals its real origin.

Sets 5, 7, 8 and 9 show partial similarity with b, w or bh as common phonemes. 5 and 7 contrast and may lead us to postulate two distinct sources. But one has to note that set 7 belongs to Younger Avesta and the contrast is between a corresponding form of the Gatha Avesta like *aiwi/ aibi* (Skt. *abhi*). Either we should exclude forms of a different dialect or regard this as a kind of free variation of a diaphone. In comparative work where strict free variation is difficult to prove due to lack of sufficient data, the second situation may be helpful in many cases. When dialect mixture is suspected one may use a kind of diaphonemic writing along with morphophonemic symbols for purposes of reconstruction. Sets 5 and 7 thus reconstruct as *b and 8 and 9 as *bh.

The following sets can be taken together.

t/t	t/θ	th/θ	th/t	t/ð	th/ð	t/t	t/s
11	12	13	14	10	15	22	44

11 and 12 do not contrast, so also 22 and 44. 44 occurs before a following dental stop. 22 after a set like *s/s* (no. 51), 12 before consonants other than dentals and 11 elsewhere. We reconstruct I-I *t. 13 and 14 are in complementation and give us I-I *th. 10 and 15 contrast with each other, both occurring after fricatives in Avesta and hence 10 can be assigned to I-I, *t and 15 to I-I *th.

Sets involving voiced dentals are :

d/d	dh/s	d/ð	d/θ	dh/d	dh/ð	ḍ/d	d/z
16	17	18	19	20	21	23	45

Sets 16, 23 and 45 can be shown to be continuations of the same phoneme. 23 occurs after Avestan \check{z} , 45 before a dental stop and 16 elsewhere. Sets 18 and 19 are mutually exclusive, 19 occurs before u 18 elsewhere. Both contrast with 16 but belong to the younger form of Avesta. Hence all can be put together as I-I *d. 17 and 20 are in CD and 21 gives us a diaphone d/ð. Hence all these come from the I-I phoneme *dh. Thus we get I-I *t, *th, *d *dh.

The sets involving velar stops are easy to reconstruct. 24 k/k and 25 k/x give us *k, 26 kh/x and 27 kh/k give us *kh; 28 g/g 29 g/γ give us *g and 30 gh/g 31 gh/γ give us *gh.

From the palatal sets 32 c/č and 33 c/s give us, *c. Sets with j are

j/j	h/j	j/š	j/z	h/š	j/s	h/z
34	35	39	40	42	41	43

35, 34, 39 and 43 are mutually contrastive. Hence four phonemes have to be set up. 42 goes with 43 and 40 goes with 39. 41 contrasts with 39 but occurs in only one item *yasnō* and must be set aside as aberrant. The traditional symbols for these phonemes are j (IE g) for 34, jh (IE gh) for 35; \check{z} (IE \check{g}) for 39 40 and 41 and \check{zh} (IE \check{gh}) for 42 and 43. The first two belong to the younger palatal series, the last two to the older palatal series. To the older series also belong sets 36 $\acute{s}/\acute{š}$, 37 \acute{s}/s giving I-I * \acute{s} and 38 ch/s reconstructed as I-I, * \acute{sh} .

Sets 46 s/š 47 s/h and 48 s/s are in CD and represent phoneme I-I *s. To sets 49 ϕ/\check{z} and 50 ϕ/z are assigned the voiced *z. 51 $\acute{s}/\acute{š}$ and 52 r/\check{z} give us I-I * \acute{s} and I-I * \check{z} , which are in CD with s and z and may be further reconstructed as only two phonemes /s/ and /z/.

53 r/r and 54 l/r give us two phonemes *r and *l. The I-I which included all the dialects of the OIA must have kept the distinction between the two, which was lost in Iranian. The remaining sets 55 m/m 57 \acute{n}/\acute{n} 58 y/y 56 n/n are distinct and easily lead to the reconstruction of I-I *m * \acute{n} *y *n. I-I *w has been already reconstructed out of the sets 59 and 60.

We have thus reconstructed the following phonemes of I-I :

Vowels	i	ī	u	ū
		a	ā	
	ai	āi	au	āu

Consonants :

p	t	č	k
ph	th		kh
b	d	ǰ	g
bh	dh	jh	gh
m	n		ṇ
ś	śh	ž	žh
s	z		
r	l	y	w.

This is in fair agreement with the usual reconstruction of I-I. As we have excluded all clusters of consonants a ch is missing.

To summarise the position of the comparative method, we may point out that it is essentially a more accurate formulation of the traditional practice of reconstruction, which clearly separates internal reconstruction from comparative reconstruction and is able to take note of all considerations which are usually used for this purpose, by making use of morphophonemic symbols, diaphonic writing and the use of economy of the changes involved in the reconstruction.

IV

VEDIC SANSKRIT AND CLASSICAL SANSKRIT

THE history of a language traces the growth of a language-system over a considerable period of time, during which it undergoes change. The change may be great enough to merit a new name for it and then the history of that language covers the development of one language into another. Thus the history of a Modern Indo-Aryan language may trace its origin to one of the dialects of the Middle Indo-Aryan which in turn comes from the Old Indo-Aryan form. For all of these stages we have documentary evidence and the word history can be applied to it even in its more precise sense. But one can trace the origin of the Old Indo-Aryan form of speech to an earlier stage called Indo-Iranian, which in turn can be traced to the IE parent speech. As these stages are not attested to us in a documentary form, we may call this part of study as pre-history. While the documented history uses a strictly historical method, the pre-history of a language has to make use of the comparative method in the absence of documents of these earlier periods. But the task essentially remains the same; *viz.* the explanation of the later system in the light of the earlier system which it has replaced.

It is usual to distinguish between the external history of a language and its internal growth. In one sense the evolution of a language can be thought of as so many successive adaptations which it undergoes to the changing social conditions in which it is placed. It is thus closely connected with the history of a culture or civilisation. Language changes due to the use made of it, and the use of the language depends upon the character of those who speak it, which character, in turn, depends upon the general conditions of life, the habitat, the occupations of the speakers, in one word, on the degree of civilisation of the society to which the speakers belong. But it is rarely that a society develops in isolation. It is subject to influences from all sides from its neighbours and political events profoundly modify it. Migrations or conquests bring the language into contact with other conditions or other forms of speech and there starts a close interaction between the two leading to more rapid changes. The different institutions in the society like religion, school, academies, professional guilds and many others affect the language and we see the rise of literary languages and specialised forms of speech as well. The spread of the culture extends the area of the speech-community which leads to the formation of dialects in course

of time. A language may thus get split into divergent forms, or get contracted and ultimately die out or get mixed up with other so as to present quite a new appearance. All these events constitute its external history.

But it is not true to believe that if a language is left alone and no great external events affect its speakers, it will remain unchanged and lack history. Languages develop in a spontaneous fashion due to the inner forces which manifest as so many tendencies peculiar to each language. As we have seen earlier the external events produce the necessary atmosphere for the inner changes to take place, and the actual evolution of a language is an intricate net-work of both the types of forces acting and reacting on each other. In this sense, de SAUSSURE's argument that the two should be separated and kept apart is not likely to help us understand linguistic growth. He himself admits that everything that changes the system of a language in any way is internal history of the language, and external events may often give the initial push for many changes in the system. Borrowals may produce phonemic changes in the languages as changes of other type and language-contact is one of the potent means of accelerating linguistic change. Spread of a language entails its split into dialectal forms, and the close interaction among the dialects may ultimately prove to be the real source of the so-called spontaneous change in a language-system. In any case the interaction between the idiolects is the basic reason of growth in language, and the main source of linguistic change must be sought in this social use to which language is put.

De SAUSSURE has drawn another distinction between the external and internal history of a language, which pertains to the method used in their study. External history can be pursued in an atomistic manner, adding one detail to another, while the internal change can be only systematic and hence a systematic approach alone is possible here. Whether an atomistic approach is possible to trace the external history of a language may be left out of consideration, but such an approach to the internal history of language current in earlier historical studies cannot be justified any more and the structural approach in historical linguistics makes a systematic approach now essential. We must view the history of a language as marked by succession of stages each one giving us a close-knit system in which the parts derive their value from the relations which they bear to each other and to the system as a whole. The history of a language thus views the replacement of one system by another in course of time and thus observes the changes in the values of the items of the system. Like all historical studies the study of the language-history thus considers it as falling into well-

marked epochs or stages, and one of the first tasks of the historian of a language is to separate them as clearly as possible. Very often these epochs coincide with the rise of new tendencies in a language and mark stages which are different as a whole from the earlier ones.

Languages show a spread in space, with differences from one locality to another. Linguistic geography marks the limits of a particular linguistic feature individually and no two such features are likely to coincide in a given area. Hence there are no strict dialect boundaries except where a large number of such features cluster together and impress the speakers of the dialects on the two sides of these bundles of isoglosses as distinct forms of speech. A similar thing is found in the changes which occur in time. Each change in a language system is independent of the other and possesses its own beginning and end, which may not coincide with other changes. But when a large number of such changes occur in the same period, the forms of speech earlier and later to it may strike the speakers or observers as two distinct systems and hence two epochs in the history of the language. In extreme cases they may call them different languages. A synchronic description of such stages is thus an essential feature of the history of the language and a comparison of such stages is the systematic method of studying this history.

But the historical study cannot confine itself to such a systematic approach alone. To make the resulting changes by such a comparison understandable, it is necessary to take note of the changes which intervene but are not necessarily structural in the strict sense of the word. This can be seen clearly if we take into account a few striking features of the structural statement as far as it pertains to the phonology of the language. The desire to build up a system of the phonemic units of the language often leads the phonologist to include in his analysis features which are either earlier to the given stage or are likely to set in at a later stage in the development. If Sanskrit vowels *e* and *o* can be better represented as short diphthongs like *ai* and *au*, it is mainly because they were such diphthongs in the earlier stage of the language, the Indo-Iranian period. If we find it more systematic to analyse Marathi *ṛ* as a combination of a *e* and a *y*, it is mainly because it has developed out of such a combination. When we set up a phoneme like /*ɔ*/ in Sindhi to match with /*ε*/ though actually it is a diphthong like [*ɔə*] this is due to the fact that this sound is tending to become a monophthong as the other one has already become a simple [*ε*]. If the limited contrast between short and long [*ɔ*] and [*ɔ:*] in Oriya can be best regarded as a contrast between /*ɔ*/ and /*ɔə*/, this is simply

due to the origin of the long vowel in the contraction of the two vowels in the earlier stage.

Often the phonemic system neglects the relative chronology of the changes which are dependent on each other. Thus the merger of the IE, *e*, *o*, and *a* into a single phoneme *a* and the rise of the contrast between the velar stops like *k*, *g* and the palatal affricates like *č*, *ǰ* are synchronically regarded as simultaneous while actually the shift of the velars towards the palatal articulation preceded the merger of *e* and *o* and was certainly caused by the fronted articulation of the vowel *e*. The short and long *e* and *o* vowels of the MIA are dependent on the single or geminated nature of the following consonant and as such phonemically irrelevant. But their origin is mainly due to the assimilation of the consonant clusters which preceded them and cannot be understood without its knowledge.

A similar situation is involved in the matter of segmentation. A phoneme may be considered as a cluster of two because it has developed out of such a cluster or may be so regarded because it tends to become such a phoneme. In all such cases, the historical study will have to take note of the actual changes whether they have a structural significance at a given time or not. Hence along with the systematic approach, an atomistic study of individual changes is necessary for the correct understanding of the historical growth of a language.

The study of the history of Sanskrit can be considered as involving the problem of demarcating its main stages in its growth. Up to the very recent past, it was generally agreed that the documents of Sanskrit were the oldest among the attested forms of the IE languages. The discovery of Hittite did not materially change the position, because its affiliation to the IE group was either considered as of a different nature, a kind of collateral branch or its nature was thought to be mixed up with a type of Anatolian language. But the discovery of the Mycenaean Greek has changed the position radically, and we have now records of a well known IE language going back to about 1400 BC ; in any case, earlier than the date to which Rig-veda, the oldest Sanskrit document, can be reasonably ascribed. This has brought renewed interest in tracing the earliest indications of the Indo-Aryan language outside India and we find attempts made to reassess the evidence of such a language in the Middle East revealed by the Hittite documents and the Mitannian names of kings etc. One such sustained attempt is made by P. KRETSCHMER who tries to follow the wanderings of the Indo-Aryan tribes from the earliest days before their entry in India proper. He bases his conclusions on the interpretation of the names of places, rivers

and tribes which are scattered all along the way the Indo-Aryans must have followed in their eastward march. Linguistically it is possible to find the traces of the earliest Indo-Aryans on the other side of the Caucasus mountains, north of the Black Sea and the Caspian Sea. Herodotus calls the river Volga by the name Oaros which can be best explained with the help of the purely Indian word *vār* 'water'. The river Bug is known to the Byzantine writers as Koûphis. Two other rivers between the Black Sea and the Caspian Sea are also known as Kóphes and Kophen. All these names are the same as the Vedic river name Kúbhā. At the lower reaches of Kuban lived the people called Sindoi which Hesychus explains as Indikon and stands for Sanskrit Sindhavaḥ 'inhabitants on the bank of Sindhu'. The picture of the war-chariot found at Derbent points to the place where the Indo-Aryan crossed the Caucasus mountains. The name of the mountain itself is Indian, which includes the root *kāś-* 'to shine' as its second member. The Indo-Aryans then crossed the Caspian Sea and names like Dásai and Sindes indicate their presence. Some of them went to the upper Mesopotamia and founded the kingdom of Mitanni. Others went through Gedrosia where they have left the name of a city called Poûra, which is Indian *púra* 'city', and finally entered the land of the five rivers. Though many individual details can be explained otherwise, the whole picture appears reliable enough and probably indicates the events with fair amount of accuracy. Linguistically the preservation of the short diphthong *ai* and the intervocalic sibilant *s* is quite characteristic.

In the development of Sanskrit itself, it is usual to distinguish between the older form of the language called Vedic Sanskrit and a more recent form called Classical Sanskrit. This distinction is known to Indian grammatical tradition and is generally accepted by modern scholars. As the changes in Sanskrit are gradual and affect its different aspects at different times, it is not easy to separate the two stages, and the language of the later works of Veda is very close to the language of the oldest Sanskrit works outside the Vedic corpus. In Veda itself we can easily trace a process of change and simplification in the language and one is accustomed to distinguish between the language of the oldest parts of the Rig-Veda, that of its later parts like the 10th Maṇḍala, the language of the AV, and of the other Saṁhitās, the language of the prose of the Vedic works, in which an older and a younger phase can be distinguished; the language of the Sūtras and so on. The same is true of the Classical Sanskrit though not to the same extent. We may distinguish the language of such older works as Yāska's Nirukta, the language at the basis of Pāṇini's grammar, the changes noted by Kātyāyana, and by Patañjali and so on. This naturally

poses the problem, wherein lies the distinction between Vedic Sanskrit and Classical Sanskrit, and what evidence is available to us to ascertain features which can be regarded as marking the Classical language as against the Vedic language.

The unity which pervades all forms of Sanskrit and binds the Vedic language and Classical Sanskrit together, is primarily of a phonetic nature. Except for some insignificant differences, the phonological system of both the types remains the same. The sounds have not undergone any striking change, no new sounds are evolved and their distribution remains virtually the same. The tendency towards hypersanskritisation has always affected the sounds of the words and clearly indicates that the essential nature of Sanskrit was thought by the speakers to lie in its sound-system. A greater latitude for differences in forms and their usage was allowed all along the history of Sanskrit. In this sense the inclusion of forms of Sanskrit like the epic dialect, the language of the Buddhist works and many others among the group of Prakrits and not Sanskrit goes against the natural sentiments of the speakers of the language, and is based on the grammatical considerations to which scholars have given greater weight.

A systematic comparison of Classical Sanskrit with the Vedic language may be first attempted as a preliminary to decide the difference between these two epochs. The Vedic language is characterised by an abundance of grammatical forms, which are lacking in the Classical Sanskrit. The richness is mainly due to the close adherence to the original IE pattern of the language, which was greatly simplified in the Classical stage. This difference is most marked in the conjugational system and the verbal derivatives than in the declensions of nouns and pronouns. Moreover the vocabulary of the two languages shows a great difference. The words of the older language are lost to the later speech, new words are introduced in the Classical language and many Vedic words have undergone semantic change. There is less difference in their syntax and least of all in their phonologies.

As regards the SOUND-SYSTEM of the Vedic language we have to make a distinction between the form of the language as it is handed down to us in the *Saṃhitās*, particularly that of the RV and the form of the language as it was originally intended by the poets who composed the Vedic hymns. The finer rules of Vedic metre help us a good deal in ascertaining a number of phonetic features of the original language, which was lost sight of by the later redactors who simply removed these from the text in accordance with a theory which was established at a much later date. On purely metrical grounds we know that the semi-

vowels *y* and *v* had often the values of vowels and groups containing these were regarded as dissyllabic in actual pronunciation : *dvā* : *duvā*, *jyā* : *jiyā*, *tvā* : *tuvā* etc. To disregard this difference in pronunciation would mean that the Vedic poets were lacking all sense of metrical rhythm,* which is obviously not true. Often long vowels represented a later crasis of two short vowels and this is most consistently seen in the termination of the Gen. pl. *-ām* standing for *a-ām*. It is more difficult to ascertain the presence of a short vowel called Svarabhakti in a word like Indra (*Indāra*). But this is well-known to Indian phonetic tradition and the writing of the Mitanni words may lend it some additional support. Frequently the Sandhis observed in the texts have to be set aside and hiatus admitted as in a case like *pastyāsu ā* (written as *pastyāsvā*). In a few cases, metre demands a different phonetic value of words than what is seen in their written form ; *pāvaka* must be read as *pavāka*, *chardiḥ* as *chadiḥ*, *prthivi* as a dissyllabic word, *nṛṇām* as *nṛṇām*, and *mṛḷaya* as *mṛḷaya*.

The spelling of some words in RV reveals a few features of the phonology of the language. There is visible a relaxed pronunciation of intervocalic sonant aspirates like *dh*, *bh*, which often become *h*, especially in the inflections (cf. *pāhī* : *kṛdhī*), and often in an unaccented syllable (*ihā*, *idha*). According to MEILLET this change was much more common in the original language, but was obliterated by the redactors of the text under the influence of the current language. In the case of the voiced retroflex sounds in the intervocalic position, *ḍ* and *ḍh*, the RV tradition consistently shows this relaxation in the writing of *ḷ* and *ḷh* for them (*jihīlānāsyā*, *voḷhā*) but this distinction has no phonemic value. This change was not confined to RV alone as can be seen in the writings of the later Saṁhitās which substitute *l* for *ḷ* (AV *phal iti*, VS. *turāṣāl*, TS. *vāl iti*). If this writing represents the pronunciation accurately, we have a good case of phonemic merger between intervocalic */ḍ/ [ḷ]* and */l/*

The Vedic language shows a steady progress in the substitution of an *r* sound by an *l* sound, whatever the value of the original IE word. The oldest parts of RV, like the old Iranian dialects, have only an *r* sound (*mruc-*, *rabh-*, *roma-*, *rohita-*), while already in the 10th Maṇḍala we meet with *l* in these words (*mluc-*, *labh-*, *loma-*, *lohita-*) while both the sounds are found in *svaṅguri* and *daśāṅgula*. Similar is the case with the words *upara* (later *upala* 'stone'), *prava* (later *plava*), *ripta* (later *lipta*) and *mūra* (later *mūla*). The AV shows more cases of *l*-sound (AV *lap-*, RV *rap-*, AV *aślila* : RV *aśrīra*) as do the later Saṁhitās (SV. *pāmsule* : RV *pāmsure*, VS *likh-*, *kuḷāla*, *sthūla*, *vāla*, but *sarira*, MS. *pulitāt* but also *aśvavāra*). In the Brāhmaṇas *l* becomes

quite common except for the archaisms like AB *bahura*, *urūka*. In view of the fact that ancient Iranian dialects contain no *l* sound, it is suggested with great probability that the original language of RV contained only *r*, and the growing frequency of the *l* sound is due to the influence of the spoken language which was slightly different from the Vedic speech, allowing both *r* and *l*. The evidence of the much later Māgadhi Prakrit which changes *rs* to *ls* is not conclusive in proving the existence of a third ancient dialect with the use of *l* exclusively. The preference for *r* or *l* is in no way connected with the tendencies peculiar to different Vedic schools.

A similar state of things can be seen in the use of dentals and their growth in the cerebral or retroflex sounds at a later stage; particularly when no neighbouring sound can account for such a change. As compared to Classical Sanskrit the Vedic language possesses the original dental sounds in a few words, which show a retroflex sound in the later language. The change has begun already before the end of the Vedic period, and the precise nature of the cause, whether the effect of substratum or natural growth, is not ascertainable. Words which uniformly show a dental in the RV, include *dī-*, to fly, (ŚB has both *dediyatavai* and *ḍitāra*)- *pan-* 'to praise', (AB has *pan-* and *paṇ-*, JB *paṇ*), *aṭ-*, 'to wander', (Cl. Sk. *aṭ-*), RV and SB *āti* (but the Sūtras *āti*), *bhaṇ-* (Cl. Sk. *bhaṇ-*) RV and AV *cat-*, (Cl. Sk. *caṭ-*), *nada* (ŚB. *naḍa*), *avata* (SV. TS. *avaṭa*).

The most conspicuous feature of Vedic phonology which marks it off from Classical Sanskrit is the use of a free musical accent as an integral part of the word. It is differently noted in different Vedic works and possesses different values. The RV preserves in its acute accent (*udātta*), the nature and place of the principal IE accent, mostly in its primitive function. This can be seen by a comparison of the Vedic accent with the Greek acute: *dhūmāḥ*, *thūmós*; *mānas*: *menós*; *jānaḥ*: *génos*; *mádhu*: *méthu*. Being a part of the phonemic make-up of the word, it is used to distinguish between otherwise identical units, between the action noun (*véda* 'knowledge', *grāha* 'seizure', *trópos* 'way', *trókhos* 'revolution') and the agent noun (*plavá* 'boat', *codá*, 'inciting', *tropós* 'thong', *trokhós* 'wheel'); between the genders of the words with the same suffix (*nábhas* n, 'cloud', *uśás* f, 'dawn', *néphos*, *hēós*), or between the meanings of identical words (*gónos*, *goné* 'off spring', *tímos*, *timé*, 'honour', *bráhman* n, *brahmán* m). Like Greek, the acute of the Vedic was not limited to any part of the word and could occur in any place. In this sense it was free: *bhára-māṇaḥ*: *pherómenos*. The original circumflex was not inherited by the Vedic language, but has probably left its traces in the dissyllabic

value of some long vowels (gām cf. Gr. *bōn* ; *dyām* : Lesbian Gr. *zeūs*). The independent svarita of Veda is a new development, mostly after the original form of RV, due to contraction (*kvè* : *treis*), while the *anudātta* or grave accent refers to the toneless syllable (*me*, *te*, Gr. *moi*, *toi*). Better than RV, where the *svārita* has attained the highest pitch, the *udātta* has preserved its original highest pitch in the MS. and K.

The Vedic system of accentuation shows a number of changes by which the original accent is replaced by another. Thus the *svārita* on the final syllable becomes an *udātta*; *dyāus* < **dyāus*, or the syllable preceding *svārita* may get an *udātta* instead (*mītrya* < **mītryā*), which has become a rule in the ŚB. There is also a tendency by which the accent appears to be regulated by the number of syllables in a word. Thus a dissyllabic word may accent its final, which may get shifted to the antepenult in a word of three syllables: *padā* : *dvipādā*; *astrām* : *khanītram*.

A change of place may be observed in the Vedic period itself. Thus RV shows *suphāla*; *subāndhu*, but AV has *suphalā*, *subandhū*; RV *kanīnikā* AV *kanīnikā*; RV *saptā*, ŚB *sāpta*; RV and AV have the Sandhi accent *divīva* (from *divī*+*iva*), the TS has *divīva*. The ŚB has developed a secondary accent mostly in compounds: *ēka-catvāriṃśat*.

The SANDHI in the Vedic language is in many respects archaic, and nearer the spoken conditions than is the case with the classical language. The final *a* and *ā* are nasalised in hiatus (*yathā eṣa*) and the text of the RV always keeps final *a* and *ā* separate from the following *r*-, though in many cases, the metre suggests the later practice of pronouncing it as *-ar-*. The written practice of the RV *Samhitā* shows a two-fold divergence from the original practice of the poets: in many cases of the Sandhi of similar vowels we have to pronounce the two vowels separately along with shortening of the first vowel if long (*mā āpeh*) while in others we have to follow a double crasis where the text shows a hiatus (*tendra*). The more natural character of the language is also seen in the rhythmic lengthening of vowels, which occurs in definite places and in certain words: *tenā*, *pibā*, *kṛdhī*, *vāvṛdhe*, and the curious form *sānti*. The older language shows a much limited use of the so-called *abhinihita* sandhi by which the final *-e* and *-o* absorb the following *-a* (*sadyo apibah*) and in this the writing is not always consistent with the actual pronunciation. The basic principle appears to be to have the absorption of the initial *a-* when the final *e* or *o* were long, and to keep it apart when they have a short metrical value.

Traces of the older stage of the language in which there yet existed a final consonant like *t* or *s* are revealed in a number of sandhis which are peculiar to Veda. Thus final *ān*, *īn*, *ūn*, before vowels and sometimes before, *y*, *r*, *l*, *v* give rise to nasalised vowels followed by the *r*-sound, which is a development of the voiced form of *s*, with which the words originally ended (sargām̐riva nṛm̐r abhi). The word-final *n* requires the insertion of a sibilant before *c*- or of a dental before a sibilant (anuyājām̐śca ; ahaṇt sahasā) only where these sounds were etymologically justified, while this practice becomes generalised in the later language. The sentence or word-group as the basis of Sandhi explains the change of *n* to *ṇ* and of *s* to *ṣ* even when the retroflex sound is found in another word, (ni ṣasāda ; pra ṇa āyūṁṣi) and other changes like divaspari, dyaus pitā, or in compounds : duṣṭara, mithaspr̥dhyā where the internal Sandhi is observed.

The DECLENSIONAL SYSTEM of Veda shows a greater richness of forms than that of Classical Sanskrit, which is produced by the use of phonetic variants like *ā* and *au* ; both short and long endings side by side (*ī*, *i*, *ū*, *u*.); duplicate inflections (*aiḥ*~*ebhiḥ*), different bases and grades (nau-, nāvā-), preservation of ancient forms (Gen. plu. in -*ām*) rhythmic variations (*ena*~*enā*; ghṛtavānti; paśumānti unless we take it as a lengthened grade); and a few analogical creations (gonām, kratunā). Compared with the system of the later language, we find the differences between the two as mostly due to the preservation of older forms, the absence of syncretism of different types mostly in the feminine nouns, the absence of new analogical creations in the neuter nouns, and in few cases, new formations which have failed to continue in the later stages (patinā, patch). Among the different parallel forms, only one survives in the classical language. On the whole, the difference is greater in the vocalic stems than in the consonantal types.

The most important and wide-spread variation is between the two endings *ā* and *au*, which covers all types of declensions except the derivative stems in *i*, *u* and *ī*. Originally due to the influence of the following sound (-*ā* before consonants and -*au* before vowels) this variation is found in the Nom. Acc. dual of Mas. vowel-stems (narā~narau), of Mas. and Fem. *ṛ*-stems (hotarā~dātārau ; mātārā~mātarau ; pitarā~pitarau), and in many consonantal stems (vācā~vācau ; purā~purau ; apasā~apasau ; hastinā~hastinau ; rājānā~rājānau etc.). These -*ā* endings are more frequent in RV, but slowly lose ground in the later Saṁhitās. The alternation of the same sounds occur in a different context in the Loc. sg. of *i*-stems of all genders, where also originally *ā* stood before consonants and *au* before a pause (agnā~agnau ; sātā~sātau). The *ā* forms of the Mas.

become extinct by the time of AV, while TS and VS have no *ā* forms in the Fem. In the Nom. pl. we have the parallel forms with the inflections *ās* and the double-inflection *ās-as* (which grows much less in AV and negligible in TS), in case of Mas. *a*-stems (somāḥ~somāsaḥ) and in Fem. *ā*-stems (dhārāḥ, pāṛthivāsaḥ); here the longer form is mostly confined to RV and AV. In a case or two these longer forms are also used for Acc. plural (AV. araṅgamāsaḥ).

Outside these general variations affecting two or more genders and types, the Mas. and Neu. nouns in *-a* show declensional forms which are much closer to the later one current in the classical language. Nearly all the deviations here are due to the remnants of the older stage of the language. In the Inst. sg. the later normal ending *-ena* (as in yajñena) is sometimes lengthened into *enā* (ṛtenā) and in a few cases preserves the older ending *ā* (yajñā, dānā). In the Gen. and Loc. dual one or two base formes show no *y-* before the ending *oḥ* as the word already ends in *y* (pastyoḥ RV). In the Inst. plural there exist the two endings side by side, the older one in *-aiḥ* and the pronominal one in *-ebhiḥ*, as suggested among other things, by its *-e-*, less frequent from the very beginning and slowly getting eliminated: aśvaiḥ~aśvebhiḥ, stomaḥ~stomebhiḥ. In the Gen. plu. there are a few relics of the other ending *-ām* beside the later *-ānām* found in certain phonetic conditions carathām, janām, devām (n). The Neu. stems in *-a* have the alternative forms in *ā* and *āni* (analogically formed after the Neu. *an*-stems) in the Nom. Acc. plural (yā te bhīmāni āyudhā), as also Neu. *-an* stems (brahmā analogically after *ā*-stems~brahmāni). The *ā* ending, which is older, is also the more frequent in RV, but grows less in AV.

The monosyllabic *ā* stems are nearly confined to RV. and become less frequent in the other Saṁhitās. These radical stems at the end of a compound show a tendency to shorten their final, as can be seen from RV. somapāḥ but AV. somapaḥ, RV. nāmadhāḥ but AV. nāmadhaḥ. Even in the Vedic language there is visible the tendency to differentiate between the Mas. and Fem. by showing no *s*-ending in the Nom. for the latter. The classical language has preserved no independent stem of this type.

The declension of the Fem. *ā*-stems of the derivative nature is nearly identical with that of the classical language. Beside the extended form of the Nom. plu. they show the older termination *ā* in the Inst. sg. (maṇiṣā) along with *yā* (senayā, māyayā) which grows rare in the AV (five new ones as against 93 of the RV). There are two forms of

the Dat. sg. mahīyai, svapatyai, which have no *y*-insertion, probably for euphonic reasons.

The Mas. *i*-stems are equally close to the forms of the classical language. Only two stems preserve the ancient 'strong' flexion, which attaches the normal terminations directly to the stem-ending : Gen. sg. avyaḥ, aṛyaḥ, Ac. sg. aṛyam. N.A., plu. aṛyaḥ. It is better preserved in the In. sg. where there are five forms of this type (pavyā), while the analogical *nā* already holds the ground. In contrast to the later patyā, the Veda has the analogical form patinā, which has failed to survive. The Neu *i*-stems show greater difference from the later model, mainly on account of the absence of *n*-forms, analogically produced and which alone were allowed later in case of the substantives. While rare cases of the later forms are found mostly in the later parts of RV and AV (In. sg. śucinā, N.A. dual akṣiṇī AV, N.A. plu. bhūriṇi), no form of this type are found in the Dat. sg. (of the type vāriṇe), Ab. Gen. sg. (of the type vāriṇaḥ) and Loc. sg. (like vāriṇi). Secondly, the Neu. stems have the same endings as the Mas. in the weak cases (Dat. sg. śucaye, Gen.sg. bhūreḥ), which were later allowed only in case of the adjectives. Older forms in this declension are to be seen in N.A. dual (śuci, mahi) and N.A. plu. (śuci, bhūri) probably originally a collective singular. There is one rare Loc. dual sākhthyoh (VS) without the *n*-insertion.

The strong flexion, which was probably originally confined to words with unaccented finals, is better preserved in case of the *u*-stems, where some seven or eight words keep such forms. The accentual conditions show some analogical mixing even in RV. Thus the Mas. *u*-stems have such forms as : In. sg. kratvā, paśvā, beside the later usual kratunā ; Dat. sg. śiśve, kratve ; Ab. Gen. sg. pitvaḥ, vasvaḥ and N.A., plu. madhvaḥ, paśvaḥ in addition to the later usual forms like vāyave, sindhoḥ, rubhavaḥ, ṛtūn etc. In an unexpected manner, a *n*-form has once got into the field of the Gen. sg. caruṇaḥ. In the Loc. sg. these words have the Guṇa form (sūnavi) or the later common lengthened grade base without inflection (kratau).

The Neuter *u*-stems show from the very beginning forms with *n* : In. sg. madhunā, Dat. sg. madhune, Ab. Gen. sg. madhunaḥ, Loc. sg. sānuni ; N. plu. purūpi and N.A. dual jānuni (as late as VS). These are the only regular forms of the classical language and may have an origin different from similar forms of the *i*-stems. But the older forms, mostly identical with the Mas. nouns, are also found : Ins. sg. madhvā, Dat. sg. paśve, urave, Ab. Gen. sg. madhvaḥ, madhoḥ, Loc. sg. sānau, sānavi, N.A., dual urvī. Some of these show a strong flexion.

In the N. sg. they show two alternative forms : ūru, ūrū and three in the N. plu. vasu, vasū, vasūni.

In the declension of the Fem. vowel-stems, the Vedic language is much truer to the original conditions than the classical language though syncretism and influence of one type on the other is already visible. From RV onwards we find both these tendencies operating throughout the Vedic period, with the result that the final stage in the Veda closely resembles the state of things current in the classical language. Besides the fact that a word may sometimes form a few cases according to a type other than its normal one, we witness here a steady influence of the derivative *ī*-type on all others, giving rise to duplicate forms, mostly in the weak cases of the singular, and the blending together of the two originally distinct types of *ī*-stems, giving rise to a composite type later on.

Originally there must have been distinct declensions for stems in *-i* (mati-type), monosyllabic stems in *-ī* (dhī-type), polysyllabic stems in *-ī* showing a shift of accent from the original word from which they were derived and without vowel-gradation (vrkī-type) and for derivative *ī*-stems with ablaut variations (devī-type). In the declension of the first type, forms of Dat. Abl. Gen. Loc. sg. with the terminations of the *ī*-type, are rare in RV, but grow more and more frequent in the later Vedic language and finally become the recognised alternative forms in the classical language. Dat. of the type *tūryai* is formed from 7 stems in RV, mostly in the tenth Book, while AV has eleven such stems and VS has as many as 40. A similar growth is observable in case of the Ab. Gen. forms in *-yāḥ* and Loc. in *-yām*. The influence of the *ī*-type in the Nom. plu. giving rise to forms like *bhūmīḥ* (beside *bhūmayāḥ*) and Ins. pl. *ūti* (RV) has left no trace in the later development. In Veda, this *ī*-type deviates from the classical model by the presence of additional forms in Ins. sg. with *ī* (*acittī*) and a few in *-i* (*suvṛkti*; AV has only one case *asmṛti*), and a few forms of the Mas. type, *dhāsinā* (RV), in Dat. sg. *ūti*, and once in Loc. sg. *vedī*, with the original inflection *-i*. Of the two alternative forms (*ājā* ~ *ājau*) the *ā*-ending soon became obsolete so that there is no such form in the TS.

In the monosyllabic *ī*-stems (dhī-type) the Veda knows practically no influence of the derivative *ī*-type in the Dat-Loc. cases in the sg. which has given rise to alternative forms in the classical language. Dat. sg. forms in *-yai* (*bhiyai*) first appear in the VS, and the Loc. sg. in *-yām* (*dhiyām*) in the AV. In the Gen. plu. the normal form shows the ending *-nām* (*dhīnām*), but RV. once preserves *dhiyām*.

The two feminine *i*-types (*devī*, *vṛkī*) are kept distinct in many cases, in the oldest stage of the language, but forms suggesting of mutual influence begin to appear already in the Vedic period. In contrast to Classical Sanskrit, the two types show different forms in the Nom. sg. (*vṛkīḥ*, *devī*, but already in AV. *nadī*), Acc. sg. (*vṛkyaṃ*, *devīm*, but AV. *nadīm*), Dat. sg. (*vṛkya*, *devyai*, but TS. *meṣyai*), Ab. Gen. sg. (*nadyaḥ*, *devyāḥ*) Loc. sg. (*gaūrī*, *devyām*); N. Ac. dual (*nadyā*, *nadyau*, *devī*; but AV *phalgunyau*, VS. *patnyau*) and N. Ac. plu. (*nadyaḥ*, *devīḥ*, but AV. *urvyāḥ*). Other forms due to mutual influence, like N. sg. (AV. *devīḥ*) N.A. dual (AV. *nadī*) and N.A. plu. (*nadīḥ*) have no consequence later on. Two stems of the *devī*-type left behind traces. *Oṣadhī* is treated as a *i*-stem in the sg. (N. *oṣadhiḥ*, A. *oṣadhim*) and as an *i*-stem in the plural except in the N. (*oṣadhayaḥ*), but in the later language the *i*-forms predominate. *Rātrī* continues to belong to the *devī*-type in the older language, but has become *i*-ending in the classical idiom (AV. N. *rātriḥ*, Ac. *rātrim*).

The question of the *u*-stems is different. There are no traces of the type corresponding to the *devī*-group with vowel-gradation. Thus there are only two varieties, one including derivative *u*-stems and the other made up of both the monosyllabic *ū* and derivative *ū*-stems, (differing among themselves according to the normal phonetic variation of having a vowel after a monosyllabic and a semi-vowel after a polysyllabic stem : *bhuvam* but *tanvaṃ*). In the first type, the Vedic language has negligible forms of the *i*-type in the Dat-Loc. sg. which are the regular alternative forms of the classical language (Dat. sg. *iṣvai*, Ab. Gen. sg. *iṣvāḥ* Loc. sg. *rajvām* (AV) all confined to the later passages of RV). The Ins. sg. shows a few forms with *y* before the inflections *ā* (*āśuyā*) beside the regular one (*dheṇvā*) and in N.A. plu. we have one or two cases (*śatakratvaḥ*, *madhvaḥ*) where forms identical with Mas. strong flexion, are found.

The original identity of the two *ū*-stems is best seen in RV, but already in AV. we have the assimilation of the derivative stems with forms of the *devī*-type, which becomes the rule in the classical language. Thus differing from this later growth, we have in RV, Ac. sg. *tanvaṃ* (but in RV itself *śvaśrvām*, AV. *tanūm*), Dat. sg. *tanve* (VS. *tanvai*, AV *agruvai*), Ab. Gen. sg. *tanvaḥ* (AV *śvaśrvāḥ*, VS. *tanvāḥ*) Loc. sg. *tanvi* (AV. *tanvām*), Ac. plu. *tanvaḥ*.

Among *r*-stems, RV shows both *narām* and *nṛṇām*, *svasrām* and *svasṛṇām* in the Gen. plu. In the Gen. Loc. dual forms like *pitroḥ*, *mātroḥ* are shown to be dissyllabic on the evidence of the metre.

In the consonantal declension we have fewer differences and only a few are of a general nature. Others are confined to matters of detail. Thus, there is the usual alternance between *ā* and *au* in the dual of most stems. In the Neut. N.A. plural, the nasal forms are rare in Veda. Words, ending in *-n* have a Loc. sg. without any inflection (*parijmani ahan, aśman, dhāman, adhvan* etc.), which is most frequent in RV. There is also no syncopation of the stem-vowel *a* before the inflection-*i*, with a single exception *śatadhāmni*, which grows into a regular alternative form later on. The same is the case in RV in the N.A. dual Neuter without exception and such forms begin to appear only in AV (*ahnī, nāmni*). In the N. A. plu. Neut. we have beside the forms in *-āni*, the usual ones in later language, two more, one ending in *ā*, which is the original one (*nāmā; ahā*) and a shortened one (*karma, nāma*) more frequent than the other. Words in *-man* show Ins. sg. forms without *m* (*mahinā*) and the oblique case forms without the loss of *a* even after a single consonant when preceded by a long vowel; Ins. sg. *hemanā, bhūmanā*; Dat. sg. *trāmaṇe, dāmane*, Ab. Gen. sg. *bhūmanaḥ, yāmanaḥ* Loc. sg. *vyomani*. RV. has the further tendency to form the Voc. sg. with *s* in place of *n*, with stems ending in both *s* and *n* (*ṛtāvaḥ, taviśivaḥ, cikitvaḥ, ojiyaḥ*), while the later language has generalised the *-n*-forms.

In addition, a few individual differences are met with. The base *pad-* is preserved, which later becomes *pād-*. With stems in *-as*, we have contracted forms in the Ac. sg. *vedhām, medhām*, and N.A. plu. *anāgāḥ*. The Neut. adjective in *-as* has a Mas. form in the Nom. sg. *sumanāḥ* (later *sumanaḥ*). The older parts of RV have a Gen. sg. *cakṣoḥ* for the later *cakṣuṣaḥ*. In the stems in *-vāns*, we have a weak base in place of the strong one in the Ac. sg. *cakruṣam*.

As compared to the classical language, Veda shows a few more forms of the pronouns. Like the nouns we have here also phonetic alternations like *ā, au*, (*tā~tau, etā - etau; imā~imau; yā~yau*) *ā, āni* (*tā~tāni, kā~kāni*), *aīh* and *ebhiḥ* (*taiḥ~tebhiḥ, yaiḥ~yebhiḥ*). The final lengthening is found in *tenā, yenā, enā* etc. in some of which the longer form may be original. The Vedic language is exceptionally rich in the pronominal bases which are used in compounds and derivatives. In the personal pronouns, we find bases like *mā-* (*māvat*) *tva-* (*tvayata*), *asma-* (*asmatrā*), *yuṣma-* (*yuṣmayant-*) and even a dual base *yuva-* (*yuvadhita*). Pronominal themes unknown to the later language include the demonstratives *sya-* and *tya-*, some old bases like *ava-* and *ama-*, the indefinite pronouns *sama-* and *sima-* a few forms of which are preserved. Further there are two pronominal adjectives *upara* and *upama*, which have not survived later. Even the Nom. base *sa-* is used to form a Loc. in RV *sasmin* and later

also an Ab. *sasmāt*. In a rare case, the oblique base *tyā-* is used for *syā* in the Fem. N. sg. A few extended bases are produced by the well-known suffix *-ka*, as in *takaṁ*, *yakā* and *asakau*.

Among the forms of the personal pronouns we have the additional forms without the final *anusvāra* (*mahya*, *tubhya*) and a comparison with Avesta (*māvoya*, *taibya*) shows them to be old. The same is the case with the Gen. plural *asmāka*, *yusmāka*. The Ins. sg. has the form *tvā* (Av. *θwā*) probably with the normal termination *ā* and Loc. sg. *tve*. RV has an Ab. sg. *mamat* from the base *mama-* of the Gen. sg. The unusual Loc. plu. forms *asme*, *yusme* are also used as Dat, but originally they may have been simply Loc. sg. of the bases *asma-* *yusma-* with the normal ending *-e*. It is in the dual, however, that a greater differentiation of forms in the cases is formed, by the addition of Nom. *āvam*, *vām*, *yuvam*, Inst. *yuvabhyam*, Ab. *āvad*, *yuvad*; Gen. *yuvoḥ*. As against the classical usage, the Ins. sg. has also the base *a-* for the demonstrative pronoun, with forms like *enā* and *ayā*. Further the Gen. dual *ayoḥ*. From the interrogative pronoun we get a form with an extended base in *kayasya* and the two derivatives *nakiḥ* (AV *nae-čiṣ*) and *mākiḥ* (AV. *mā-čiṣ*), which have the analogical extension of *k* in place of the expected *č*.

More than any other parts of grammar, the VERBAL SYSTEM shows a fundamental difference between the older and the later stages of Sanskrit, and the resultant picture is one of great contrast. On the whole, Vedic is far more rich and complete as compared to the Classical Sanskrit, which shows great losses in the verbal forms and displays a marked tendency toward systematization and simplification, based on different principles. The complicated picture of the Vedic conjugation is due to a number of causes, the basic reason for which is to be seen in its preservation of the oldest stage of the IE. language, with great fidelity. Verbs are seen to use different classes: *iṣ-* to send, *iṣyate* (4) *iṣṇāti* (9), *iṣe* (6); *kṛ-* to do, *kṛṇoti* (5), *karoti* (8), *karṣi* (2), *hū-* to call *havate* (1), *have* (6), *juhoti* (3), *hūte* (2), *hvaya-* (1); *bhṛ-* to bear, *bharati* (1), *bibharti* (3), *śi-* to lie down, *śeṣe* (2), *śayate* (1). Roots show same amount of freedom in the use of strong forms in place of the weak (*kṛṇota*~*kṛṇuta*; *sunota*~*sunuta*). Many verbs are lost in the classical period. The Veda shows a far greater use of all the tenses and different moods are found in all of them (*yacchatu*, *yaṁsat*). The inflections are richer and many alternatives are seen. (Imp. 2 sg. *-dhi*, *-hi*, *-tāt*). Some of them are extended by the addition of *-na* (2 plu. *ta-na*, *tha-na*). A set of *r*-endings are met with in the 3 p. plu. medial in different tenses and moods. As compared to the restrictions on the use of voices observed in the classical language the Veda shows

many verbs with both active and medial inflections with or without a difference of meaning (*vahante~vahanti*, *vardhate~vardhati*). A verb may take one voice in the present and another in the perfect (cf. *juṣ-* medial in the present and active in the perfect). Both the primary and secondary inflections are found in the subjunctive. Derivative verbs like intensives and denominatives show greater variety and a frequent use. The use of the augment in the past tenses remains facultative. In contrast to this, the difference due to the absence of forms in the Veda is far less marked. In the earlier stage, the periphrastic forms are absent, passive is in less use, and a few analogical forms did not yet come into vogue. All these changes may be seen in the various formations of tenses and moods.

In the present-system the older language shows the subjunctive in all its forms. Only the 1 P. active and medial are incorporated in the imperative of the classical language. Even here, Veda shows additional form in the 1 P. sg. in *ā* beside the later *āni* (*kṛnavā*, *hinavā*, *arcā*, *mṛkṣā*, *bravā*). After the analogy of this model suffix becoming *ā* in the thematic conjugation, a double modal affix is found in other classes as well. (*bravātha*, *hanātha*, *adān*, *ayān*, *kṛnavātha*, all in AV). In the middle, alternative endings in *e* and *ai* occur in many persons and numbers; which show the tendency of the later language to have distinct endings for the subjunctive than those of the indicative. Of these, 2, 3 P. sg. *-asai*, *-atai* and 3 P. plu. *-antai* are decidedly later than the corresponding lighter endings, which alone are found in RV. RV also shows in the 1 P. predominantly *-āvahai*, *-āmahai* and once *-adhvai* (2. plu.) (*mādayadhvai*). The *-ai*-ending, regular in the 1 P. sg. appears to have spread to the whole of the 1 Person by the time of RV and in the later phase of the language to other persons also. The present subjunctive is found in passive as well. (*uhyāte*, *kriyāte*).

The present indicative shows a number of important differences in the Veda as compared to the classical usage. There are a few larger terminations; the most frequent is *-masi* of 1 P. plu. for the later *-mas*. (*bharāmasi*, *arcāmasi*). In a limited number of cases the 2 P. pl. shows in active *-thana* (*pāthana*, *vadathana*) and a lengthened final (*avathā*). In the 3 P. plu. medial *-e* often takes the place of *-te* (*iṣe*, *duhe*, *dadhe*) which thus becomes identical with 1 P. sg. In 3 P. plu. med. we have *r*-endings unknown later (*vidre*, *pinvire*, *śere*). A possible 2 sg. active form (*joṣi*, *parṣi*) shows an imperative meaning.

The imperfect may drop its augment (*prñak*, *bhinat*). The 3 P. plu. act. has sometimes the ending *-uḥ* beside the normal *-an* (*atviṣuḥ*, *duhuḥ*). The 3 P. pl. med. has a number of forms with *r*-endings (*aśeran*,

aduhran). The 2 P. plu. act. shows the *na*-extension (aitana, abra-vitana). The same form often exhibits a strong base in place of the weak base (ajahātana, akṛṇotana), and a similar exchange of bases is seen in other forms as well. (yuyoma 1 P. plu. injunctive).

The optative mood shows fewer differences. The 2 P. plu. act. has the extended termination (syātana, tīretana), the 3 P. pl. med. shows forms like bhārerata, juṣerata with *r*-endings. The root *duh*- has the curious 3 P. sg. act. form *duhīyat* (RV) for the usual *duhyāt* and pl. *duhīyan* (RV) for the later *duhyuh*.

It is in the forms of imperative that we find greater differences. In the 2 sg. act. compared to the classical language, the Veda makes greater use of *-dhi* (yuyodhi, śīśādhi, daddhi) with stems ending in *-u* (śṛṇudhi) and of *hi* (śnathihi, śṛṇuhi, kṛṇuhi, stanihi). In addition Veda makes frequent use of *-tāt* for the 2 P. sg. (bhavatāt, avatāt) with a future imperative meaning in the Brahmanic prose. It is sometimes extended to the 3 P. sg. also (gacchatāt, smarātāt). In the 2 P. plu. act. we have the extended termination with *-na* (attana, bhajatana) while there is a rare case of the 2 P. plu. med. without the final anusvāra (yajadhva). The 3 P. sg. act. has the additional and probably older ending *-ām* (for *-tām*) (vidām, duhām) and the irregular root *duh*- has the *r*-ending in the 3 P. plu. *duhrām*, *duhratām*. Contrary to the general practice, a number of strong forms are found in 2 P. plu. act. (*stota*, *eta*, *etana*). in 2 P. dual act. (*yuyotam*, *hinotam*) and 2 P. sg. act. (*yuyodhi*, *pīnāhi*).

In the formation of the present participle the strong base is used in place of the weak one in forms like *ohāna*, *yodhāna*, *stavāna* etc. and forms like *dughāna*, *śumbhāna* are not known to the later language. The Fem. forms of the act. participle sometimes show an exchange of strong and weak bases : *siñcatī*, *tudatī*, *yantī*.

The Vedic language shows particularly in its oldest phase, the perfect system with all its moods and its own preterite called pluperfect. But already the forms of the subjunctive imperative and optative and its past tense with injunctive forms are disappearing in the late Vedic stage and are quite unknown to the classical language. The same is the case with its active and middle participles. Naturally the difference in formation between the Vedic and the classical language can be seen only in the forms of the indicative, as the other forms are not found later. Here the general picture is the same, and differences mostly pertain to matters of detail.

The distinction between the reduplicative and periphrastic perfect is unknown to Veda, because the latter is virtually absent except for a single case in AV. *gamayām cakara*. In a large number of verbs we have a long reduplicating vowel with consequent changes in the length of the root syllable in conformity with the rhythmic law that two short syllables may not be found in the same base (*kan- cākan*; *jū- jūju-*, *tu- tūtu-*). In a number of cases the reduplicated syllable disagrees with the classical one (*vac- vavāca*; *yaj- yeje*; *śi- śaśi-*). A difference of consonant is seen in *bhṛ- jabhāra*, *cit- ciketa*. A few forms and participles do not show the syllable of reduplication: *takṣatuḥ*, *nindima*, *dāśvāms-*, *sāhvāms-*. Verbs with a light syllable often syncopate the short vowel *a* (*pan- papna-*, *tan- tatna-*), and sometimes keep it against the classical usage (*jajanuḥ*). Some roots lose a nasal in the reduplication: *krand- cakrada*; *rambh- rarabha*.

In the forms themselves, the Vedic language distinguishes the 1 P. sg and 3 P. sg. by a difference in vowel: *cakara*; *cakāra*: *tatapa*, *tatāpa*. The 3 P. sg. once has *ā* in *paprā* besides *paprau*. Strong bases in place of weak are found in *yuyopima*, *vineṣuḥ* etc. and the weak for the strong in *titiruh*, *taturyāt*.

The two forms of the language differ in the use of the connecting vowel *-i-* with consonantal terminations. It is greatly restricted in Veda and is favoured in phonetically favourable conditions. After short syllables *-i-* is not found: *jaṅṛbhma*, *yuyujma*; but is usually found after a long syllable: *paptima*, *ijire*. Thus *vavakṣe* is contrasted with *ūciṣe*. This difference becomes striking in the 3 P. plu. med. where the classical usage always requires *-i-*: *juhure*, *dadhre*, *munucre* etc. There is also an *r*-ending in 3 plu. med. *cikitrire*, *vividrire*. In the subjunctive a double modal affix is found in *vāvṛdhāti*, *pāpṛcāsi*. The imperative *dadṛśrām* has an *r*-ending as also the pluperfect: *avavṛtranta*. The long reduplication is met with in the participles as well *vāvṛdhvāms-*, *vāvasāna*. In a single case the medial part. is formed with *-māna* (*saśṛmāna*).

In Veda, the aorist formation is seen as a complete system with all the moods and participles. The classical language confines it to the indicative, a few forms of the precative and injunctive forms used with *mā*. While the roots in the classical language are distributed among the seven different types of formation, in Veda many alternative formations are possible. Thus *dhā-* forms *adhām* and *dhāsuḥ*; *yuj-* has *ayuḥi* and *ayukṣata*, and from *budh-* are formed *abodhi*, *abūbudhat*, *abhutsi* and *bodhiṣat*.

The root-aorist is formed in Veda from more roots than in the classical language where it is limited to roots ending in *ā* and *bhū-*. The Veda uses also the middle forms like *akri* and *ayuji*. The difference between the two languages can be seen by comparisons like V. *agam* Cl. *agamat*; V. *akran* Cl. *akramīt*, V. *atan* Cl. *atānīt* etc. RV. shows *abhuvam* later replaced by *abhūvam*. The 3 P. plu. med. has *r*-endings (*asthiran*, *agr̥bhran*). Beside the pure optative form (*deyām*) there is also a precative form (*bhūyās*). In the imperative the extended terminations are found in forms like *kartana*, *gātana* etc. Both *-dhi* and *-hi* are found in aorist (*kṛdhi*, *bodhi*: *gahi*, *pāhi*). There is an active participle (*krant-*) and a middle one (*krāṇa*) not known later.

As compared to the root-aorist, the *a*-aorist is limited in scope and few middle forms are found. On the other hand, it has a greater scope in the classical language which has included in it many root-aorists of the Vedic speech. (*akar*~*akaram*, *agam*~*agamat*). Like other types, it shows both forms of subjunctive and injunctive and the *na*-extension (*riṣāthana*), a few optatives (*bhideyam*), imperative (*vida*) and the participles (*tr̥pant-* *guhamāna*).

The reduplicated aorist often shows a causative meaning and a rhythmic type of reduplication with long vowels. But the older and the younger language may not show exact correspondence : RV *didipah*, later *adidipam*. While this is a thematic type in classical language, the Veda keeps athematic forms as well : *ajīgar*, *aśīśnat*. The moods of this type are rare even in the early language, and no participles are recorded.

The *s*-type of aorist is common to both Veda and the classical language. But the early language differs from the late one in having the original terminations *-s*, *-t* for the 2nd and 3rd P. sg. act. in place of the later *sīh*, *sīt*. (*abhār* : *akārṣīh* ; *akārṣīt*.) The RV also shows a number of forms with the present stem and terminations (*gr̥ṇīse*, *yajase*) with present meaning. Among the moods, the optative is found in the middle only. The imperative has forms like *neṣa*, *parṣa*, while both the participles exist (*dakṣat*, *mandasāna*).

The *iṣ-* type is frequent in both the languages. In the 3 P. sg. indi. we have a rare termination *īm* (*akramīm*) and in the 3 P. pl. act. *avādīran*. No participles are found. The *siṣ*-type is rare. The *sa*-type shows some difference between the two languages. Veda forms this aorist from roots ending in *-j* (*amṛkṣāma*, *yakṣatām*). No forms of moods and participles are found. In the precative RV has the form *bhūyāh* which is later replaced by *bhūyāt*.

Because in Veda, the subjunctive and to some extent the indicative expresses the idea of futurity, the future tense is not very common in the early stage of the language. There is a single form of the subjunctive (*kariṣyāh*) and a few forms of the participles (*dāsyant-*, *dāsyamāna*). RV shows a single form of the imperfect (later called conditional)—*abhariṣyat*. The periphrastic forms begin to appear in the Brāhmaṇa works. The difference in the formation of the future pertains to the use of the *-i-* of union, which is rare in Veda, but grows commoner in the later language. cf. V. *kartsyāmi* Cl. *kartayiṣyāmi*, V. *karmisyate*, Cl. *kramiṣyati*. In some cases we have the reverse situation: V. *svapiṣyati*, Cl. *svapsyati*.

The middle forms are used as passives in Veda even in the present tense (*śṛṇve*). The aorist passive in *-i* could be used even without the augment (*śrāvi*). More important are the differences in the formation of the causal. In contrast to the classical usage, the Veda shows both the weak and full grade and associates an iterative meaning with the first (*citaya-*, *cetaya-*; *vipaya-* *vepayaya-*; *dyutaya-* *dyotaya-*). In some cases the older language shows the full grade but Cl. Skt. has the lengthened grade (*dravaya-* *drāvaya-*, *pataya-* *pātaya-*). Roots in *ā* have form with and without *-p-* (*gāyaya-* *snāpayaya-*) The causal has the modal forms and an imperative in *-tāt*.

In the forms of the verbal derivatives, notable differences are found in three. While RV lacks the two gerundives in *-tava* and *-anīya*, the AV shows a form or two, and they become very common later on. But RV. has additional types with *-tva* (*kartva*) *-enya* (*iḍenya*) *-āyya* (*panāyya*) and *-ta* (*darśata*). The gerund also has additional forms with a lengthened end (*vimucyā*) with *-tvī* (*gatvī*) and *-tvāya* (*kṛtvāya*). The AV allows *-tvā* with a prefix in rare cases (*pratyarpayitvā*). But the greatest difference is seen in the formation of the infinitives. While the later language uses a single type with *-tum*, the Veda, particularly RV shows an astonishing richness in allowing all case-forms to function as infinitives. We have the forms of Dat. from roots in *ā* (*avasai*) from consonantal stems (*drśe*) and one or two irregular forms (*śraddhe*), from nouns in *-as* (*caḥṣase*), in *ī* (*mahaye*), in *tī* (*sātaye*) in *tu* (*etave*), in *tavā* (*dātavai*), in *tyā* (*ityai*), in *dhyā* (*stavadhyai*) and in *man* and *van* (*dāmane*, *dāvane*). We have the Acc. forms from roots (*samidham*) and nouns in *tu* (*datum*), which is rare in RV. There are Ab. Gen. forms from roots (*avapadaḥ*) and from nouns (*hantoh*). Loc. forms are few and are made from radical stems (*drśi*), in *tar* (*dhartari*) and in *san* (*parṣaṇi*).

The Vedic VOCABULARY, especially of the RV, differs greatly from that of the Classical Sanskrit. Many words have later become obsolete

and new words have entered the language in course of its history. In the mode of formation, Veda shows the derivative suffixes like *āku* (mṛdāku) -*āna* (vasvāna) -*ika* (mṛdika) -*u* (caraṇyu) -*tnu* (hatnu) -*tva* (kartva) -*vi* (jāgrvi) -*sa* (grtsa) -*sani* (carṣaṇi) and secondary ones like -*tāti* (jyeṣṭhatāti) -*tvana* (janitvana) which are not used in the later language.

The Vedic language makes a moderate use of the compounds and compounds of three words are rare. The *dvandvas* keep the accent and form of the first member unchanged and in the *tatpuruṣa*, many cases of the *aluk*-type are found. Compounds which are peculiar to Veda are, the iterative compounds (dyavi-dyavi, dame-dame) and governing compounds in which the first member governing the second may be a root (trasa-dasyu), a present-participle (kṣayad-vira) or an action-noun (dāti-vāra). The adverbial compounds are less in use.

The SYNTAX shows some striking differences. Some prepositions like *pra*, *sam* are repeated (praprānye yanti). They can get separated from the verb (ā tvā viśantu) and sometimes follow it (avṛṇod apa). They can be used alone with the verb of motion supplied (ā tū na indra), or repeated without the repetition of the verb. Many of them are used with nouns (ava divaḥ, kratum paraḥ).

The Veda shows in few cases, the ancient usage of a sg. verb with a neuter plural subject. Often case terminations are used only once in a phrase (triṣu rocane). Some verbs like *brū- vac-* govern a Nom. (indro brāhmaṇo bruvāṇaḥ). Case forms may come under the attraction of another (vṛtrāya hantave). Sociative instrumental without a preposition is frequent (devo devebhir āgamat). Many verbs govern the Gen. of the object. The active and the middle use is sharply distinguished. Different past tenses are used with distinct shades of meaning (imperfect for narration, aorist for the recent past and for confirmation and perfect for stating the result of the activity, bringing the present in relation with the past activity.) The syntax of the different moods is well developed, the subjunctive expresses will, the optative wish or possibility. Prefixes (ni-śad-), nasal forms (śumbh-) and *aya* (vardhaya) forms show a distinct factitive meaning. Later usages like the preference for the passive construction, frequent use of the gerund, and absolute cases, are less developed. Finite verbal forms are in full use and there is no inclination towards the nominal style so characteristic of the classical period.

This close comparison of the Vedic language with the Classical Sanskrit reveals one striking fact. There is no breach between the continuous development of Sanskrit as such. There are no features

which can be said to cover the whole of the Vedic period and each feature has different extent in time. The situation is very similar to the spread of linguistic innovations in a large area and like isoglosses, historical changes do not coincide in time. In the RV itself we become conscious of an older more archaic form of language and a younger one as seen in the Xth Maṇḍala and late additions to the other books. Successive stages of growth can be observed in the AV and the Mantra-portion of the other Saṁhitās, the older and the younger groups of the Brāhmaṇas and finally the language of the Āraṇyakas, Upaniṣads and the Sūtras, which imperceptibly passes over into the earlier phases of Classical Sanskrit. In fact this gradual change makes us realise more fully the basic unity of the stream of Sanskrit and the question of dividing it into the two main chronological divisions must be considered in the light of this gradual change.

The origin of Classical Sanskrit thus comes to mean : when did the writers of Sanskrit feel that their language differed from the earlier form ? When did they become conscious of this difference as a difference in a language and with what features did they associate this difference in language ? In other words precisely what features were considered as distinguishing the classical norm from the Vedic norm ?

With Patañjali, the distinction between the Vedic language and Classical Sanskrit is quite obvious. Patañjali is even conscious of a form of speech which has reached the stage of the Middle Indo-Aryan. By the process of additions and reinterpretations, both Kātyāyana and Patañjali have succeeded in extending the scope of Pāṇini's rules so as to cover many recent features of Classical Sanskrit, and some others they refused to sanction as authoritative being not used by the Śiṣṭas. For them Vedic Sanskrit is the language of the sacred literature and stands in contrast with the classical language which they themselves use.

It is usual to date Classical Sanskrit with Pāṇini and credit him with the work of fixing its norm in his wonderful grammar. Pāṇini's grammar is primarily concerned with an exhaustive description of the language to which he gives the name of *bhāṣā*. He has taken note of a large number of Vedic peculiarities and has described them with the use of the significant term *chandas*. His treatment of the whole subject leaves no doubt that he fully realised the difference between the Vedic language and the current form of speech. Though not so expressed by him, it is very likely that he must have thought of them as an older and a younger phase of the same language. It is however more difficult to ascertain the exact phase of Sanskrit which Pāṇini

called *bhāṣā*. It is just possible that he thought the distinction between the two as that between a religious and a secular form or even as literary and spoken forms. The few rules which he gives with the specific use of the word *bhāṣā*, nearly point out the differences of the current language from the Vedic usage and are due to the necessity of the arrangement of his work. On no account do they imply a difference between the basic language of his work and *bhāṣā* which is true in the use of works like *chāndas*, *mantram*, *yajus*, *Brāhmaṇa* etc. Whatever subtle distinctions he may have implied by the use of these diverse terms, it is clear that all of them were in some way contrasted with the usage of the current language and together formed the Vedic Sanskrit. With a fixed Vedic literature before him and with many Vedic schools showing different linguistic features, it is but natural that Pāṇini should take note of them, though it was not possible for him to do so in case of the current speech of the Śiṣṭas.

Various attempts are made to suggest the trait of literature which agrees with the *bhāṣā* of Pāṇini. On general grounds one can imagine that Pāṇini set aside from his *bhāṣā*, the linguistic archaisms of the Veda on the one hand and the popular vulgarisms current among the speech of the uneducated or less educated mass on the other. Long ago Dr. R. G. BHANDARKAR pointed out that the rules of Pāṇini lay so much stress on the finite verbal forms that it can scarcely represent the usual Classical Sanskrit which is dominated by the nominal style. He was inclined to set up a separate form of the language which he called 'middle Sanskrit'. LIEBICH suggested that the language of the Sūtras, particularly of the Gr̥hyasūtras, comes close to the norm of Pāṇini. The usage of the cases as taught by the Aṣṭādhyāyī agrees quite accurately with that found in the Aitareya Brāhmaṇa and the older Upaniṣads. Finally L. RENON argues that as there is no great difference between the language of the Brāhmaṇas and the Sūtras, we can conclude that the literary sources of the *bhāṣā* of Pāṇini are the prose works of the Vedic literature taken as a whole.

There are found in the decidedly classical stage of Sanskrit some features taught by Pāṇini, which mostly belonged to the older language. But this is due to the tendency of the later writers to favour puritanism and inclination towards archaisms. In a few cases, it is the direct result of the teaching of the grammarians. The Sanskrit of the later classical literature and the language of the two great national epics show distinct differences from the teaching of Pāṇini. Even if we set aside the epic language for a number of considerations, there are some significant facts even in the purely classical works which show a difference from the norm of Pāṇini. According to him, the nouns formed with

the root *han-* are confined to only three : *brahmahan-*, *bhrūṇahan-* and *ṛtrahan-*, while the usage has grown wider in later days. Pāṇini sanctions the use of only *kr-* as the auxiliary for the periphrastic perfect, but *as-* and *bhū-* also become common in later writers. Pāṇini knows nothing of the use of *mā* with either imperative or future which are found in classical writers, along with the older *mā* with augmentless aorist. He also does not record the use of accusative with the participle in-*tavant*, which is unknown to Veda. The current use of the participle in-*vas* as a predicate is not known to him, which did not occur after the Mantras. Pāṇini does not authorise the use of the thematic forms of the instrumentals *dantena*, *pādena*, in place of the older *datā*, *padā*, which are quite common in the classical language.

A number of features of Pāṇini's teaching has greater application to Vedic prose than to the later classical norm. It must be observed that Pāṇini teaches a language which was throughout accented in the same manner as Vedic Sanskrit. In one case he teaches with the definite mention of *bhāṣā*, an accentuation differing from the Vedic usage : we may also note his remark about the *uka* derivatives being used with Acc., the use of the partitive genitive with a number of verbs, and the general distinctions between the different past tenses and many others. All these have greater relevance for the late Vedic prose than to classical literature.

We can go a step further. We have the invaluable evidence of a difference of language between the Veda and the current speech in Yāska's Nirukta. He is conscious of a difference between the two. As he had no occasion to deal with the language in a systematic manner like Pāṇini, it is not possible to get a complete picture of the differences in his days. Etymology is his chief concern. But incidentally he refers to the other aspects of language. Thus he points out that while the particle *na* is used in Veda in the sense of both a negation and comparison, it is used as only a negative particle in the *bhāṣā* (I. 4). In Veda *nu* has also the meaning 'as, like' (I. 4), while *nūnam* expresses uncertainty in *bhāṣā*, it is used in Veda both for uncertainty and as a *pādapūraṇa*. (I. 5). He also notes that there are a few roots which are found as such in Veda alone, while some roots are found only in the *bhāṣā* (II. 2). He also points out a couple of usages which are peculiar to the regions of north or east and refers to the speech of the Kambojas. (II. 2). But what is most useful for us is his habit of paraphrasing the Vedic quotations in such a manner as to replace the Vedic peculiarities by the forms and usages current in the language of his own days. These indications are the more valuable because they are unconsciously followed and are not based on definite grammatical teaching as in the

case of Pāṇini and his commentators. If we leave aside his etymological explanations and his explanations as a commentator, his treatment of the hymns of RV is very revealing and his repeated practice in this regard can be safely taken as the norm of the current language of his days, to which he also gives the name of *bhāṣā*.

In the sound system it is interesting to note that Yāska continues to use *l* and *lh* for intervocalic *ḍ* and *ḍh* (tālayati 3·10) and used the dental in words like atasi (1·10) and avata (5·26). Though he changes an *r* into an *l* in many words (vāla 1·20) he keeps it in rihāṇe (10·39). Like the classical language Vedic *evā* is changed to *evam* and *kathā* into *katham* (2·10; 3·22). *tredhā* is replaced by *tridhā* (12·19) and *bāra* by *dvāra* (19·4). As a rule all metrical lengths are removed. (*bharatā*—*bharata* 10·6; *yatrā*—*yatra* 9·32) and also such length as is of doubtful nature (*tūtāva*—*tutāva* 4·25) *abhivṛtā*—*abhipravṛttā* (2·9).

In the declensional forms we find the *ā* endings replaced by *au* (*narā*—*narau* 5·1, *yonā*—*yonau* 2·8), *ebh* replaced by *aiḥ* (*śuṣmehiḥ*—*śuṣmaiḥ* 2·24), *āsas* replaced by *ās* (*devāsaḥ*—*devāḥ* 6·14 *ajāsaḥ*—*ajāḥ* 6·4). Neu. *ā* by *āni* (*uttarā*—*uttarāni* 4·20, *imā*—*imāni* 6·16), Fem. N. pl. *-īḥ* by *-yaḥ* (*sapatniḥ*—*sapatnyaḥ* 4·6, *br̥hatiḥ*—*byhatyaḥ* 8·16), Neu. shorter endings by the longer ones (*vasu*—*vasūni* 3·11, *havyā*—*haviṃsi* 8·7) and many individual forms (*maṇiṣā*—*maṇiṣayā* 2·15, *adrivaḥ*—*adrivan* 4·4, *madhvaḥ*—*madhunah* 4·8, *padā*—*padena* 5·17, *madhvā*—*madhunā* 10·31, *dhanvaṇ*—*dhanuṣi* 9·28) in all of which the classical form is preferred.

In the pronouns we find *tva*-replaced by *eka*- (1·7) *ena* by *anena* (5·11), *āyoh* by *anayoh* (3·22), *yuvam* by *yuvām* (4·19), *tvā* by *tvam* (5·7) and *asme* by *asmāsu* (5·5).

In the verbal system we have the regularisation of the active and middle in *kṛpayan*—*kṛpāyamāṇaḥ* (2·12), *iyase*—*yāsi* (8·3), the transitive active usage replaced by the causative (*vardhantu*—*vardhayantu* 1·10), the removal of the subjunctive by active (*prapatan*—*prapatanti* 2·6), or future (*kṛṇvan*—*kariṣyanti* 4·20) or imperative (*jīvāti*—*jīvatu* 4·25) according to its sense; the stem *kṛno-* always replaced by *karo-*, the perfect replaced by the present according to its meaning (*dadarśa*—*paśyati* 1·17, *viveda*—*viṇāti* 3·22), its imperative by the ordinary imperative (*mumugdhi*—*muñca* 4·3) and its participle by other forms (*śuśruvān*—*śrutavān* 1·20, *cikivān*—*cetanāvān* 8·5). In the aorist we have the later-day regularisation in the replacement of *agat* by *agamat* (2·19), *āraik* by *aricat* (3·6) *viduṣaḥ* by *vidūduṣaḥ*

(3·2) its imperative by the ordinary imperative (śrudhi—śṛṇu 3·17, pātam—pibatam 4·19) and its injunctive by the indicative (bhūt—bhavati 5·8). The subjunctive asat is changed to bhavati (5·19).

The older gerundives like snātvā become prasneyāḥ (1·9) and vedyābhiḥ as veditavyābhiḥ 2·21). The dative infinitive becomes a regular dative (avase—avanāya 2·24, dātave—dānāya 4·15), and the acc. infinitive āruham becomes a regular infinitive āroḍhum (5·25). The preverb is always brought near the verb (abhi—vaheyuḥ = abhi-veheyuḥ 10·3, ramadhvam—upa = uparamadhvam 2·25) and other syntactic peculiarities are removed. In all these changes Yāska follows the classical usage when it differs from the Vedic one, which had become obsolete in his days. We can, therefore, reasonably conclude that in all such cases the classical usage was current in his days and these features marked the difference between the Vedic and the classical language. Earlier to this, we have no means to proceed.

THE MIDDLE INDO-ARYAN ASSIMILATION

It has become the usual practice to divide the history of the Indo-Aryan languages into the three stages called OĪA, MĪA and NĪA. The MĪA group includes a number of languages and dialects, all showing a strong family likeness and marking a distinct stage in the growth of the ĪA. languages. The MĪA languages can be grouped in different ways. According to the contents of their literature we may distinguish between those which are used for religious preaching (Pāli, Ardha-Māgadhī, Jain Māhārāṣṭrī) and those which are used for secular writings like dramas, epics and popular tales (Prakrits, Māhārāṣṭrī etc.). We can arrange them according to the regions in which they flourished and on the local dialects of which region they were based like those of the North-West, of the Midland region, of the Eastern regions and of the South. From the point of view of the form in which they are preserved to us, we can separate them in literary languages, inscriptional dialects, and those on other monuments like coins and images. We may also arrange them in a chronological order according to the more or less archaic or developed forms shown by them. Each one of these classifications has its value and helps us in judging the linguistic nature of the MĪA dialects in the form in which they are available to us. We may note how the use of Māhārāṣṭrī for the composition of songs and lyrics and making artificial epics with *yamakas* and other *tour-de-force*, is partly responsible for the form in which we possess it. The use of Śaurasenī and Māgadhī with their sub-dialects and rarely Ardha-Māgadhī and Paisāci side by side in the dramas and along with Sanskrit has led to the effacement of many of their finer dialectal differences and some overlapping between them. The form of the inscriptional Prakrits is influenced to some extent by the mode of writing in which the geminated consonants are written as simple consonants and sometimes the order of the consonants in a cluster remains uncertain. Even the description of the Prakrit dialects by the Prakrit grammarians in conformity with a definite plan has left some traces on their present form, the most important of which is the tendency to form wide generalisations on the basis of a few cases. With due consideration of all such points the main task of the linguist in the field of MĪA is to ascertain the local distribution of the Prakrit dialects and to follow them in a chronological order so as to mark the different stages of their growth.

In spite of the meagreness of the evidence, its conflicting nature and the theoretical difficulty of distinguishing between regional and chronological features, it is possible to arrive at some broad conclusions. To the North-West can be assigned the Mansehra and Shahbāzgarhi versions of Aśokan inscriptions, the dialect of the Kharoṣṭhi Dhammapada and possibly Paisāci and its sub-dialects. To the East belong the Aśokan inscriptions of the Gangetic basin and those of Mahānadi, the Rāmgarh inscriptions of Satanuka and the Dramatic Māgadhi Prakrit and its sub-divisions. To the west belong the Girnar version of Aśoka, the Pāli of the Buddhist canon, the inscriptions of the Sātavāhana kings and western Kṣatrapas and the Māhārāṣṭri Prakrit. To the middland belongs Śaurasenī and to the East of it the AMg of the Jain canon ; and a similar dialect is seen in the inscriptions of Aśoka in the Deccan. But this arrangement neglects some amount of conflicting evidence and leaves some dialects out of consideration.

The chronological classification is based on a firmer foundation and is more comprehensive. To the older stage belong the various inscriptions, Pāli, AMg and Paisāci. A later stage is formed by Śaurasenī, Māgadhi, Jain Māhārāṣṭri and Jain Śaurasenī. A still more developed form is seen in the Māhārāṣṭri Prakrit and on the very threshold of the NIA stage are found the different Ap. dialects.

In contrast with the OIA, the MIA group shows quite a different appearance on account of the drastic change in its phonetic structure. In grammar and syntax, the older synthetic mode of expression continues nearly to the end of the period, although the richness of forms of the older stage is lost and now and then, especially in the Ap. dialects, we observe the rise of the analytical mode of expression. In the vocabulary, the MIA dialects are mostly dependent on the OIA, with addition of a few so-called Deśi words of uncertain origin. The percentage of these depends both on the date and the nature of the work in which they are found.

Usually assimilation of all kinds of conjunct consonants along with a few other changes, is considered the most characteristic feature of the MIA by which it is distinguished from the OIA stage. On general grounds, it is natural to suppose that assimilation of various consonant-groups was a slow process, with different stages in its growth, before it reached its maximum extent and scope, which it did in the period of the Classical Prakrits. It is not always possible to note all such intermediate stages in the history of the MIA languages. Like all linguistic changes, assimilation shows a slow spread in course of time and it cannot be rigidly confined to a particular period. However

careful we may be in choosing a number of features as marking the MIA stage as different from the OIA, it is bound to result in some kind of arbitrary distinction and a continuous process like assimilation is likely to be divided into two such periods, concealing its fundamental unity and continuity. Such divisions into periods in the growth of a family of languages like the Indo-Aryan are to be accepted more for the sake of convenience than for their strict accuracy.

The process of assimilation has a beginning which goes beyond the beginning of the MIA stage, reaching back into the OIA and it has not yet reached its final stage or completion even by the end of MIA period. Even if we try to define more accurately the distinguishing feature of the MIA languages to consist in a complete assimilation and not only a partial one, the historical limits of this phenomenon also do not coincide with the usually accepted limits of the MIA dialects.

Probably the nearest approach to such a distinguishing feature may be found in the assimilation of two plosives, which is nearly universally operative in all the stages of the MIA. Even there, the beginnings of this change are to be found in the OIA period. Classical Sanskrit shows various stages of this type of assimilation. When two stops came into contact due to a construction of morphemes, we find them assimilated as regards their voice or voicelessness, both of which are distinctive phonological features in the language as far as the stops are concerned. There usually follows the assimilation of voice to breath or of breath to voice though other features of the stops like their place of articulation remain unchanged. Thus *ad-* to eat gives the form *attum* when *tum* is added and *atsi* when *si* follows. *Vid-* to know forms with a following *th*, *vettha*. In all such cases the voiced consonant is assimilated to the voiceless consonant which follows it. On the other hand, we meet with cases where the breath of the preceding consonant is assimilated to the voice of the following stop. Thus *śak-* 'to be able' gives the form *śagdhi*. In both these types the nature of the second consonant appears to be stronger and its feature prevails over that of the first, the assimilation being regressive. When we remember that in the conjuncts of both the types, the first consonant is merely implosive or unreleased while the explosion or release belongs only to the second stop, the change becomes quite understandable. The greater audibility and consequently the greater importance attached to the consonant possessing release is the guiding fact throughout the history of assimilation in the Indo-Aryan languages. This stands in a striking contrast with the development seen in the Iranian branch of the Aryan group, where the first member of the cluster tries to preserve its articulatory identity by an added release, and the stops in such

positions usually develop into fricatives. Sanskrit *sapta* becomes *satta* in the MIA, but Av. *hapta* develops into *hafta* in the Middle Iranian.

There is, however, one apparent case in Sanskrit, in which the tendency of assimilation appears to be different. Thus a root like *labh-* 'to get' forms its participle of the past with the suffix *ta* as *labdha*. Here the voice of the first consonant appears to have assimilated the breath of the suffixal consonant *-ta*. But the real reason of this apparent exception appears to be somewhat different. When the consonant group was formed over the morpheme-boundary, the voiced aspirate (\hat{h}) of the first consonant following a widespread tendency of the Indo-Aryan languages, went over to the end of the group. Thus the voiceless consonant of the suffix was placed between two voiced sounds. This naturally led to the voicing of the middle stop and the result was a group fully voiced from beginning to end. Such a change can be formulated as : *labh-ta* > *lab + t + h + a* > *labdha*.

The assimilation of two stops was the first to be effected in the history of the Indo-Aryan. This is seen in the transcription in Greek of the name of the Maurya king Chandragupta as Sandrokottos, where, while the group of a stop with an *r* is kept, the group of the two plosives *p* and *t* is already assimilated. From the assimilation of voice or breath in stops, the change further extended to the place of articulation of the consonants, in favourable circumstances. Thus Sanskrit *ṛtte* comes from the root *ṛd* + the suffix *te*, where the particularly marked articulation of the retroflex sound has assimilated the dental of the inflexion.

The assimilation of the plosives in Sanskrit, thus, reveals the following facts : first, the assimilation is operative between the root and the inflexion, at a clearly felt morpheme-boundary, but not in the body of the word or morpheme. Secondly, no unassimilated group of two plosives is allowed to stand at the beginning of a word and a geminated plosive is also absent in such a position. Sanskrit has no initial cluster like *kt-* as in Greek *kteino* 'to kill' or clusters as in Avesta *theiša* 'teacher' or *thaešah-* 'enmity'.

The MIA differs from the OIA in making this assimilation complete and not partial as in Sanskrit, and carrying it over with equal consistency all over the phonology and not confining it to the morpheme-boundaries. We thus find it operative in the limits of a morpheme itself. The basis of this assimilation is to be found in the way in which the Indo-Aryan

conjuncts were pronounced without any release of the first member. The MIA has given greater prominence to the second member of the conjunct which was already visible in Sanskrit itself and the assimilation is uniformly regressive in case of the two plosives. But in spite of the great regularity of this change in the MIA, we find here and there a few cases where the two plosives are kept without change. That such groups are not simply inherited from the earlier OIA stage is evident from the cases themselves. They have a different origin and are produced by the working of two tendencies which conflict with each other.

The groups of two plosives are most frequent in the Girnar version of Aśoka's inscriptions, but rare in other places. At Girnar we find the termination of the gerund *tvā* of Sanskrit represented by the conjunct *-tpā*: *ālocetpā* (**ālocayitvā*), *ārabhitpā* (**ārabhitvā*), *dasayitpā* (**darśayitvā*), *paricajitpā* (**parityajitvā*). The same group *tvā* in a different context gives us *catpāro* (*catvāraḥ*). Here we find the tendency of assimilating the second member to the first both as regards voicelessness and plosion, as a result of which the semi-vowel *v* becomes *p* probably passing through the stage of *b*. A similar change in the initial position is found in the word *dbādaśa* (*dvādaśa*) in the Girnar version, where the voiced nature of the first consonant has preserved the voice of the other. This group of two plosives at the beginning of a word, which is not tolerated in Sanskrit, shows that either we have here an unusual tendency foreign to the Indo-Aryan languages as a whole or that we have to do with some graphic peculiarity, not exactly reproducing the intended sounds. Besides the semi-vowel, even the nasals have been assimilated to the preceding stops, thus giving rise to groups of plosives Aśoka (Girnar): *ātpā*- (*ātma*) *ātpapāsaṃḍapūjā* (*ātmapāṣaṇḍapūjā*); *tadātpano* (*tadātmanah*); Sd. *mahātpā* (*mahātmā*); but br. *mahatpā*. This change is presupposed by the other versions of Aśokan inscriptions also, as they carry the change a step further and assimilate this group of two plosives into a geminate. Thus Shahb. *badaśa*, M. *duvadasa*. In the Niya Prakrit we have the form *badaśa*.

A number of considerations makes it difficult to believe that we have here a mere graphic peculiarity. Thus some dialects of Aśoka show the further development in the assimilation of such groups as *d+b*. The Māhārāṣṭrī form *appa* shows that there was first the change of *-tva-* to *-tpa-* which later became *-ppa-*. Pāli has *bidala* for *dvidala* and the Classical Prakrits show such forms as *bāravaī* for *dvāravatī*; *bāra* for *dvāra*; *bāraha* for *dvādaśa* and *be* for *dve*, all of which cannot be explained without the assimilation of *v* to *d* giving rise to *db*. The

Greek transcription of *dvāarakā* is found as *Barake*. Here the first consonant of the group exerts a decisive influence over the second and assimilates it as regards the features of voice, plosion and even denasalisation. This type appears to be opposed to the usual type of assimilation current among the Prakrit dialects.

In order to explain the nature of this peculiar process of assimilation, we must examine more in detail the phonetic structure of the Sanskrit cluster which is at its basis. One thing which distinguishes these clusters from others is the fact that the second member is a semi-vowel like *v* or a nasal like *m*. Both these sounds possess an incomplete closure which distinguishes them from a regular plosive. Phonetically it is quite possible to pronounce a consonant with a semi-vowel like *v* or *y* without making it a cluster capable of making position for the syllable which precedes it, in other words, without forming an ordinary cluster of consonants, which are either labialised or palatalised. Normally, in the body of a word, the preceding consonant was doubled in Sanskrit when a *v* or *y* followed it, and a word like *cavārah* was pronounced as *cattvārah*, with the first syllable metrically long or heavy. This usual practice has resulted into the normal treatment of the MIA assimilation as in *cattāro* where the syllabic division was *cat/tvārah*. With this type of syllabication *tva* became *tta*. But in some locality or dialect, there appears to have existed another kind of syllabic division and a different pronunciation of such groups, as can be seen from the statement of the *Taittiriya Prātiśākhya* XXXI. 7. according to which the first consonant was counted with the second syllable, giving rise to a syllabic division like *ga-tvā*. Dr. S. VARMA rightly objects to this division on the ground that such a syllabication cannot be valid, if the first syllable of the word is long by position. But it is equally likely that what the statement means is the fact that this syllabic division also implied a different syllabic value for the word, and the sound *tva* was a mere labialised consonant, not making position. This is not a mere theoretical supposition but something which corresponds to fact is seen from the important feature revealed by the illustrations from the inscriptions of Aśoka. In all of them the syllable which precedes the seeming conjunct preserves its original vowel length, which is an abnormal feature for a Prakrit phonology. In all these cases we must admit that the first syllable was an open one and thus postulate a syllabic division like *ā/tman* exactly like *ga/tvā*. With such a pronunciation present in a dialect the peculiar assimilation in these words can be easily explained.

These considerations lead us to the conclusion that a dialectal difference in the pronunciation of Sanskrit conjuncts has given rise

to two divergent developments in the MIA, one of which is prominently represented by the Girnar version of Aśoka's inscriptions while the other is seen in his other versions and the Classical Prakrits. The treatment of the Girnar version is further continued in the Ap. dialects where we find the forms of gerund with the inflections like *-pp* - < *twi*, *ppinu* < *twīnam* and its further phonetic development into *-vi*, *-viṇu*, *evi*, *eviṇu*, etc. It is equally clear that this distinction in syllabication could not exist with the same precision when the group stood at the beginning of a word and the usage here must have been fluctuating. Exactly in such cases we find the change spread over to other Prakrits as well, as can be seen in the wide distribution of words like *bārasa* < *dvādaśa*, *bāravai* < *dvāravatī* and an intermediate stage is seen in Aśoka's *dbādasā*. Similarly alternative forms are also found initially in Apabramśa in words like *taĩ*, *paĩ* from Sanskrit *tvayā*. A good parallel to such changes is furnished by the changes of IE *dv*- in Latin. Here *dv* has become *b* in words like *bellum*, *bonus*, *bis* (earlier *dvis*) and *bimus* (earlier *dvi-himus*). The older forms like *dvellum*, *dvonum* are in fact preserved in the inscriptions. Further Latin also shows the same alternative change in words like *dimus*, *dés* as dialectal forms and the classical form *dirus* from **dvei-ros*. And we know that Latin kept a syllabic division like *pa/tris*.

We may thus come to the following conclusion. The conjuncts of the type, stops followed by *v* or *m* in the OIA showed a difference in development according as it stood initially or medially. In the initial position no consistent difference in pronunciation is observed and the MIA dialects show both the treatments in different words or even in the same word side by side. In the middle of a word, however, two distinct and mutually exclusive developments are seen. The more common is represented by the Classical and Jain Prakrits which allowed the normal type of a progressive assimilation. The other, less extensive in scope, is seen in the Girnar version of Aśoka and the Ap. dialect and is based on a different type of syllabication of the Sanskrit clusters due to a different type of pronunciation.

When a mute is followed by a nasal, we have seen how in one line of development the nasal was assimilated to the stop as regards plosion and voicelessness. But the Classical Prakrits go a step farther and assimilate the nasal to the preceding stop as regards the place of articulation also. As early as Aśoka we find *a(g)gikaṃdhani* (*agniskandhāni*) M, *atta* (*ātma*), K.M.S., etc. Girnar shows also an anaptyctic treatment in *pāpunāti* (*prāpnoti*) which is further continued into Prakrit *pāuṇai* in contrast with the regular Pāli form *pappoti*. The treatment of such groups with reference to the palatal stop, is to be noted in

particular. Even in Sanskrit, we find the assimilation of the nasal as regards place of articulation in *jñāta* (cf. *jānāti*) but not as regards nasalisation. Prakrit has extended the scope of the process to include nasalisation as well.

In Aśoka *ājñāpayati* is found as *aññapayati* at Girnar, but as *ānapayati* in S, as *ānapayati* J, as *ānapayati* at Br. But the distribution of the resultant sounds is not the same in case of the forms of the word *rājan*. G. has *rañño*, S. *rañño*, but not a form with *n* or *ṇ*. Pāli also preserves the two-fold treatment, with its decided inclination towards *ññ* in agreement with its general phonetic system. Thus : *paññā* (*prajñā*), *viññāna* (*vijñāna*) and forms of *rajan* like *raññā*, *rañño* etc. but also *ānatti* (*ājñāpti*) *ānapeti* (*ājñāpayati*) thus exactly reversing the position of the Girnar dialect. Among the Prakrits the change of *jñ* to *ññ* is seen in Māgadhī and Paisācī, but it is changed to *ṇṇ* or *nn* in the other dialects. In the older stages of the dramatic Prakrits, we find that the fragments from Aśvaghoṣa represent *jñ* as *ññ* in what is called by LÜDERS, the old Śaurasenī dialect, while Bhāsa's works show both *añña* and *aṇṇa* for *jñ* in Śaurasenī and Māgadhī, with a predilection for *ññ*.

For other groups of mutes with nasals, we may note the unusual treatment in *rukṃavati* as *rumṃavati* in Pāli. The Kharoṣṭhī Dhammapada alone preserves groups like *atmana* (*ātmānam*), *atmano* (*ātmānaḥ*). The Niya Prakrit changes Sanskrit *tma* into *tva* in *atman* = *atva* which agrees with the Mansehra form *atvapaṣaḍa* of Aśoka.

In attempting to determine the sequence of these changes of the groups, mutes plus nasals, we must, first of all, draw a distinction between the two lines of development which are mutually exclusive. The normal treatment of the MIA is to allow the nasal to be assimilated to the preceding stop, while in a few limited cases, we find the nasal assimilating the stop. The preservation of the unassimilated group is rare, being confined to the Kh. Dh. the Niya Prakrit and some dialects of Aśoka. In the case of *tma*, the process was obviously *tm* > *tv* > *pp* which is confirmed by the fact that in the intermediate stage the *tv* developed out of *tm* falls together with the original *tv* of the OIA and together develops into *tp* in Girnar. In this sense, the change of *tm* to *tv* is earlier than the change of *tv* to *tp* in the Aśokan inscriptions.

But the different changes which the OIA *jñ* undergoes may give us better evidence as regards the sequence of changes and reveal some dialectal difference. The distribution of the two developments, into

a geminated palatal nasal $\tilde{n}\tilde{n}$ and into a geminated dental or retroflex nasal nn or $ṇṇ$, may suggest a dialectal difference for the inscriptions of Aśoka and the dramatic Prakrits. But we do not find a regular agreement in the treatment of a root like $\tilde{a}j\tilde{n}apa-$ and the declensional forms of $rājan$ even in the same dialect and the same is true of Pāli. The historical sequence $\tilde{n}\tilde{n}$ (Aśvaghoṣa) $\tilde{n}\tilde{n}$ or $ṇṇ$ (Bhāsa), $ṇṇ$ or nn (Classical Prakrits) may give us a chronological order, but when we consider that both the changes are reflected in the earlier inscriptions, we have to admit that it is not a simple case of $\tilde{n}\tilde{n}$ further developing into nn or $ṇṇ$ in course of time. The only definite conclusion which we can take as well-founded is that in the Śaurasenī dialect the earlier sound $\tilde{n}\tilde{n}$ was replaced later by $ṇṇ$, but one cannot assert that the earlier sound changed into the later one.

While the change of $j\tilde{n}$ to $\tilde{n}\tilde{n}$ implies a case of regular regressive assimilation, where the following \tilde{n} has assimilated the preceding stop, the development of the dental or retroflex nasal is due to some other kind of change. It looks probable that in the second type of development, the palatal plosive was more of the nature of an affricate with a dental stop as its plosive element. When the following fricative element was followed by the nasal, it was lost in the middle of the two stop sounds and the group was assimilated to a dental nasal which later became retroflex giving us the groups nn or $ṇṇ$. This means that while the change of $j\tilde{n}$ to $\tilde{n}\tilde{n}$ implies a pure palatal plosive sound for j , the second type of change shows that it had an affricate sound with a dental stop followed by a fricative of an alveolar type. The two lines of development thus go back to two types of pronunciation of the OIA cluster $j\tilde{n}$, and allow us to draw no chronological conclusion from these two changes.

In the group, nasal plus stop, Sanskrit itself shows an assimilation as regards the place of articulation so that there is found only an homorganic nasal before a stop. Such a group is generally kept throughout the development of the IA languages down to the modern times.

BLOCH has pointed out that in the languages of the North-west group, like the dialect of the Dhammapada, the nasal has voiced the following voiceless consonant and has assimilated the following voiced stop. Thus $paṅka$ is represented by $paṅa$ and $maṅcaka$ by $maṅjaka$, while $udumbara$ becomes $udummara$ with a complete assimilation. To this type of change also belongs the forms of the numeral $pañca$ in compounds in Aśoka's dialects: $paññāsa$, $pannarasa$, $pañṇaviśa$ and also the stray word $ārammaṇa$ for $ālambana$. In Aśoka's inscriptions themselves we find $pañca$ as an independent word kept unchanged

in S.M.G.K.J.D., but shows the change in compounds like *paṛṇaḍasa* T. *paṛṇavisati* T. Rp. Considering the general practice of the MIA it is natural to suppose that while the nasal + homorganic stop was usually preserved, the change of voicing it and assimilating it must have occurred as a dialectal feature. Both these types of changes followed the change of assimilating the two stops.

Groups of consonants followed by the semi-vowels *y* and *v* are of greater interest to trace dialectal developments. They can be pronounced as simple labialised or palatalised consonants which can be detected by the fact that the preceding syllable will be considered as metrically short, or they can be pronounced as long stops followed by the semi-vowels so that they make position. Long ago MEILLET pointed out that in Sanskrit and Homeric Greek groups of this type always made position and rendered the preceding syllable metrically long. This is explained by him on the supposition that in one case the plosive was single while in the other it was geminated or lengthened, giving rise to a syllabic division, like plosive/plosive + semivowel. The rules of the Sanskrit grammarians allow an optional gemination in such cases which may indicate a difference in pronunciation. With a lengthened consonant, the natural development would be a geminated consonant with assimilation of the semivowel, which is what we find in the MIA stage. Thus Skt. *sattva* becomes *satta* and *addya* develops into *ajja*. A very close parallel to this development can be seen in the change of IE *k'w* to *pp* in Greek *hippos*, corresponding to Skt. *aśvaḥ*. The *-dhya* in Sanskrit *madhya* is represented in Greek by *-ss-* which indicates that the stop was geminated in Sanskrit *-ddhya*.

It is unlikely that both the pronunciations could have been current in the same OIA dialect. The remarks of the Prātiśākhya suggest that some OIA dialects may have preserved the simple labialised or palatalised pronunciation of the stops without gemination. The major Prakrit dialects show a geminated consonant with the semi-vowel assimilated, thereby indicating that the OIA dialects from which they developed had the same type of pronunciation as was current in Classical Sanskrit. But we cannot ignore a large number of cases in the inscriptions and literary Prakrits in which the semi-vowels remain unassimilated and the stop is not lengthened, thus continuing another type of pronunciation.

In the inscriptions of Aśoka we find clusters with both *v* and *y* kept in a large number of cases. There are forms like *abhyuṇnamisati* T. *abhuṇnamayeḥaṃ* T. *tadatvāya* K.O.J. *tadatvaye* S. M. *dve*, *dvo* G. *sakyamunī ru. mokhyamata* D. T. *sakye br. avadhya* Rdh. Rp.

In all such cases it is difficult to admit that the cluster made no position. It is more natural to suppose that here also, as in Sanskrit, the first plosive was pronounced long or double and the process of assimilation was not fully carried out. An instructive case in this regard is the Aśokan *adhigicya* (*adhikṛtya*) br. where in spite of the palatalising effect of the semi-vowel *y*, it is not assimilated and is graphically represented.

But there are a number of cases, particularly in the Kalsi version of Aśoka, which shows a different state of things : *akālikye* (but at M. *akalike*), *kosikyāni* T. *kaligyā*, *kaligyeṣu*, *kaligyāni* K. (*kaliṅga-*), *nātikye* K. *nikyaṃ* (*nityaṃ*) K. *panātikya* K, *palalokikyā* K, *pālatikyāke* K. *bhojapitinikyeṣu* K, *saṃsayikye* K. In all these cases the presence of *y* can only point out to a kind of peculiar pronunciation of the preceding stop and not a cluster capable of making position. Its absence in the corresponding Sanskrit forms and its constant association with the velar stop *k*, indicates that it was used to mark the palatal pronunciation of that consonant and nothing more. The indication of a palatal sound of a plosive with the help of a written *y* implies that the dialect had clusters written with *y* which indicated a palatalised pronunciation of a consonant. This marks an earlier stage in the growth of a full palatal sound represented by *č* as in Aśokan *acayika* S. M. *aja* S.M.G. K.O.J. *ajā* K. etc.

This type of cluster survives much longer in the MIA dialects as compared to the other types. It is only at a much later phase of the MIA that such groups were fully assimilated. In the various inscriptions in Prakrit we meet with such groups : *garuḍadhvaje*. The K. Dh. has a number of such cases : *sutvana* (*śrutvā*), *hitva* (*hitvā*), *chitvana* (*chitvā*), *catvari* (*catvāri*). But the largest number of such unassimilated cases are to be found in the literary Pāli dialect. With *v* as the second member of a cluster we have the very frequent forms of the gerunds ending in *tvā* as in *mutvā*, *vatvā*, *dāsayitvāna*, *ṭhatvā*, *bhajitvā* etc. We find it in the initial position in words like *kva*, *kvaci*, *dve*, *dvidhā*, *dvedhā*, *tvam*, *dvādasama*, and medially like *bhāradvāja*, *vidvā*, *avidvā*. In a few examples such a cluster follows a nasal : *sagantvā*.

The same position holds good in case of clusters with *y* as the second member. Thus in Pāli we have forms like *ārogya*, *agyāgāra*, *sokhyaṃ*, *khantiyā*, *sakyamuni*, *sakyā*, *ratyā*, *tyāham* etc. In a few examples we find a long vowel preceding such a group: *vyākhyāna*, *vākyam*. This may suggest that here the group was so pronounced as not to produce the length of the preceding syllable by position, and the same is true of forms like *khamtiyā*.

In the Dramatic Prakrits we have the solitary case of *dhvānam* in the fragments attributed to Aśvaghoṣa, which LÜDERS considers as a scribal error. Otherwise these Prakrits uniformly assimilate all such clusters.

In ascertaining the way in which such groups got assimilated in the period of MIA, we have to distinguish between two types of pronunciation. The one type implied or involved no gemination of the stop, which is found in groups with *y* in K. version of Aśoka and also in such written groups which occur after a long vowel. The other type of pronunciation where the stop was longer and represented usually by a gemination in writing was, however, more wide-spread and led the way to complete assimilation. An intermediate stage of development is revealed when we compare such Pāli forms as *laddhā* (*labdhvā*) and *karitvā* with the later Prakrit forms *laddhā* and *karittā*. The changes must have been, *tvā* becoming *tā* after a plosive but remaining *tvā* after a vowel, at this stage. Later on both the types were assimilated to the form *tā* which is the only one available in the Classical Prakrits.

More important for the history of MIA assimilation are the groups with the second member a liquid or *r*. Such groups have undergone diverse developments in the IA branch. Some types of these groups have maintained themselves throughout the history of the IA languages including the Classical Prakrits. In a large number of cases they are assimilated in the MIA period either with or without the cerebralisation of the dental which may be involved in such groups. And in a limited number of cases these groups show a kind of transposition of the two members. The distribution of these changes indicate some kind of geographical or dialectal origins, but consistency in these matters is out of question. It is not difficult to get cases of all the three types of development side by side in the same dialect or even the same document. To make the matter more complicated, we have also to take into consideration, paleographic features which have some bearing on the exact order of the consonants in a cluster.

We may set aside the treatment of such groups by means of anaptyxis from the other changes. This treatment is very old and is seen in the pronunciation of Vedic words like *indra* as *indara*, and continues to be used even in the modern times whenever Sanskrit words with these clusters are drawn upon; *dharam* for *dharma*, *karam* for *karma* etc. which are met with in all modern Indo-Aryan languages. Even in the MIA period, such further developments as *vaira* for *vajra* or *pauma* for *padma* presuppose an earlier stage like *vajira* and *paduma* based on anaptyxis and such forms are actually found in Pāli and the older Prakrits.

One may even suspect that such cases were far more frequent in the actual usage than is revealed by the records of the middle and modern Indo-Aryan languages, because of the conservative nature of the writing habits and their inclination to give the forms as current in Classical Sanskrit.

Even in the Sanskrit period, we have traces of the future developments of such groups, which are usually explained as due to the influence of Prakrits or as borrowals from Prakrit dialects. We have words like *bhalla* from *bhadra*, *kṣulla* from *kṣudra* and *kuṭṭima* from *kr̥trima*.

As regards the phonetic make-up of these groups, the Indian grammarians lay down that the plosive is doubled in pronunciation and the orthography usually represents it as such. Some of the grammarians like Pāṇini prescribe the doubling as optional, but a number of considerations lead us to think that the usual pronunciation involved the doubling or lengthening of the plosive element. Thus even when a Sanskrit syllable begins with a cluster like *tr* or *pl*, as occurring at the absolute initial of words, words in which they occur in the medial position show the preceding syllable as long by position. Moreover, where the stem ends with a consonant or a vowel, a suffix like *tra* gives the words the same sound value as in *pattra* from *pat-tra* and *a-tra*. In other words there is no phonemic contrast between *ttr* and *tr* in the language. The usage of the Mss. also agrees with such a pronunciation. As pointed out by MEILLET, this is a trait inherited from the IE period, because like Sanskrit the Homeric language also makes position with such clusters in the medial position. But a different pronunciation was equally old. Thus Latin and the Attic dialect allows a syllabic division with a medial cluster like *tr* without the preceding syllable being considered as metrically long. A similar tendency is observed in the Buddhist Sanskrit works, where metrical considerations show that a syllable remained short even when followed by a cluster of a plosive and *r*. The rule of Pāṇini that consonants are not doubled in such clusters after a long vowel may apply to such a pronunciation of these clusters.

At the beginning of the MIA stage, both the tendencies are reflected in the two-fold treatment of such clusters in the inscriptions of Aśoka, viz. preservation of such groups and their assimilation. When an assimilation is found in the MIA form, it is necessary for us to assume an earlier stage in which the plosive was doubled or lengthened which naturally led to the elimination of the following sound. In those cases where the group is preserved unassimilated either initially or after a long vowel or a nasal including *anusvāra*, we have naturally to assume

that the cluster was kept with a single plosive as the first member and was differently pronounced from the first type. In course of time even this type of pronunciation was simplified and there developed a single consonant out of these clusters, a development found in a few cases in Prakrit.

In the first line of development, there appears to be a geographical difference between the preservation of such a group and its assimilation. The western dialect of Aśoka shows a decided preference to preserve such clusters, while the eastern dialect favours assimilation. Thus we find *agrena S. M. (agenā K), añatra G.S.M. anatra M. atra S. (ata K), atikratam S. M. atikrātaṃ G. (but also atikātaṃ G), (atikaṃtaṃ D.J.K.T.), agrabhuti S. agrabhuta M. (agabhuta K) apagratho S. avatrapeyu S. asaṃpratipati G. (asaṃpaṭipati S.M.K.D.) mahamatra S. M. (mahāmātā G), keralaputra S khudrakena S. tata S. M. tatrā G. diyadhamatre M. diyadhamatre S.-yatra S. yadra M. nikramaṇa S. M. paratrā S. M. paratrā G. putra S. M. putrā G. mitrena G. mitra- S. M. What role the script plays in the preservation of these clusters cannot be precisely ascertained.*

Cases where this cluster is preserved initially or after long vowels are: *parākramena G.J.D., grahatha S. trayo S. tri G. tredasa M. priya S. M. dhruvaṃ prādesike G. pradeśike S. M. prāṇā G. praṇa S. praṇani M. prāṇesu br. prakaraṇe G. S. pracāntesu G. praja S. M. prajā G. priti S. bramaṇa S. brāhmaṇa G. bhratuna S. M. bhrātā G. mrigaviya M. mrugaya S. mrugo S.*

Another source of such clusters is the original Sanskrit cluster of *r* followed by a plosive, where the sounds somehow get transposed. The actual pronunciation in these cases remains doubtful because the mode of writing in the inscriptions may be responsible for such a change. As HULTZSCH remarks, the letter *r* is either attached to the preceding letter or to the following letter without any regard to pronunciation : *aṭhra, S. aṭhrasa S. krama (karman) S. kramataraṃ S. grabhagarasi M. grabhagaraspi S. (garbha-), drasanam S. (darśanam) dhrama (dharma) S. M. priyadrasi S. priyadrasine M. vadhri M. (vṛddhi), vadhra M. In rare cases we find a cluster with r where no such cluster exists in Sanskrit : praśaḍa M. prasaṃḍa G. (pāṣaṃḍa). Parallel cases like asaṃpratipati ; asaṃpaṭipati, khudrakena : khudaka, prati : paṭi would suggest that the preservation of the cluster and the cerebralisation of the dental were exclusive of each other.*

Such clusters are found in the Niya inscriptions: *etrisa krita, driṭha, apruchiti*. From later inscriptions we can cite cases like *jeṭhabhadrasa,*

ukram̐ti, brahmadevo, brahmano, putreṇa, bhagabhadrasa, trātarasa, trini, apramāda.

The Prakrit Dhammapada in the Kharoṣṭhi script has a number of such cases : bromi, supraudhu (suprabuddha), praujhati (prabudhya-ti), prañaya (prajñayā), pramajea (pramādheta), apramadena (apramādena), tatra, prudhi (pr̥thak), driḍha (dṛḍha), ratra (rātra), pravatia (pravartya) pratu (prātaḥ), priu (priyaḥ).

The picture offered by Pāli is nearly the same as that of the inscriptions except that cases of transposition are rare (cf. gadrabha for gardabha). We find the cluster preserved in : nigrodha SN. tatra SN. citra, bhadra, udriyati, atraja Jat. brāhmaṇa Mil. guttimdriyo SN. añña-tra SN. annatra Jat. utrastam SN. bhadraṇvudho SN. bhadraratā. The groups with *l* which are preserved are : uplāpayam, viplāvitam, upaplavim. Assimilation is, however, quite normal and such cases can be found in all books in Pāli. The cases cited above, however, show that such clusters can remain side by side with cases of the usual assimilation and may have been felt as archaic.

The situation is different in the case of the Classical Prakrits. The process is seen to be regularly operative in the whole range of Prakrit literature and exceptions to it are nearly non-existent. But this evidence of the literary dialects of the Jain Prakrits, both canonical and post-canonical, and the Prakrits of the dramas must be accepted with some amount of reservation. Representing a highly developed literary style, where the scholarly hand of the poet has tried to level down all linguistic features to the accepted standard of the grammarians and wherein an attempt at some kind of consistency is seen, it is natural to expect only a disguised picture of the real spoken language and its features. This becomes much more evident when we take into consideration the fact that even the conservative Prakrit grammarians found it necessary to admit some kind of exceptions to the process of assimilation of clusters involving a plosive and *r*. Thus Vararuci tells us that in a conjunct like *-dr-* the group may be optionally preserved, (III 4.). This is illustrated by his commentator Bhāmaha with examples like droho, (also doho = drohaḥ), candro (also cando = candraḥ), rudro (also ruddo = rudraḥ). Hemacandra (VIII 2. 79) makes an exception in case of vandram and allows optional retention of *dr* (VIII. 2.80). His examples include words like bhadro (bhadraḥ) samudro (samudraḥ), and a case involving metathesis like draho (hradaḥ). He further notes that a few words like vodraha which are considered as Deśī, preserve such a cluster. Mārkaṇḍeya (3.4) also allows the same exception for *-dr-*. His remark that vidrāvāṇa does not lose its *r* also shows that the

language could keep such clusters unassimilated. But most literary works in Prakrit do not show many cases of the preservation of such clusters.

But the most convincing evidence to believe that consonant clusters with *r* were retained in the popular speeches of the MIA period comes from the literary Apabhraṃśa. Here both the grammarians and the usage of some literary works, agree in pointing out that such a practice was valid, and what is of greater importance, was more widespread in the earlier stages of the Mss. tradition and was leveled down in course of time under the constant influence of the literary Prakrits. Hemacandra's treatment of Ap. does not expressly take note of its dialectal variety. But his examples and some of his rules clearly show that the language he describes was not uniform and showed traces of features both dialectal and archaic in origin. Thus he points out that *r* as the second element of a cluster may remain (VIII 4.398) giving forms like *priyeṇa* and further (VIII. 4.399) Ap. may show groups with *r* even when the corresponding Sanskrit form shows no such cluster. This situation is illustrated with examples like *vrāsu* (*vyāsaḥ*) etc. More important than his rules is the fact that a large number of verses cited by him from earlier literature show a sizable number of cases in which conjuncts with *r* are met with : *grṇhai* (336), *praṃgaṇi* (360a), *dhrum̐ traṃ*, *bhranti* (360), *kṛdantaho* (370) *tudhra* (372) roots like *bruva-* *broppiṇu*, *broppi* (391), *prassadi* (393), *vratu* (394), *priya* (401), *prayāvadi* (404), *prāu*, *prāiva*, *prāimva* (414), *dhruvu* (418), *pramāṇiau*, *drammu*, *dravakkau*, *drehi*, *trṇāi* (422), *pēmmadrahi* (423), *grṇheppiṇu*, *dhrum̐ priu* (438), *antraḍi* (445). Just before Hemacandra, Namisādhu has also described Ap. in nearly identical terms. He says that *r* as the second member of a cluster is kept in words like *prakhura*, *bhrayara*, *vadhreṇa*, while in some words an *r* is added, *vracala*, *vracau* etc. A *r* is kept in words like *trṇa sama gaṇijai*. Earlier still Rudraṭa illustrates his *bhāṣāśleṣa* with stanzas which show forms like *kriḍanti*, *prasaranti*, *praṇayi*, *bhramara*, *mitra*, *suvibhrama* (4.21), *abhramada*, *prasarā* (4.15), which could not be regarded by him as Ap. unless the language allowed the retention of such clusters. Puruṣottama and others make a mention of Ap. dialects and allow the retention of such groups and the vowel *r* in the Nāgara variety (XVII. 15). Some of his other rules permit forms with clusters : *kimpradi*, *kimpradu*, *kipru* (XVII. 25), *jaṃ*, *truṃ* (XVII. 56), *tatru* (XVII. 57), *prassa* (XVII. 80), *grṇha* (XVII. 87). For the Vrācaḍa variety, he informs us that groups of *r* and the vowel *r* are kept except in words like *bhrtya* and substitutes like *varha* for *vr̥ṣa* (XVIII. 12). Kramadīśvara gives the retention of *r* as a second member as the characterisation of Ap. in general and the retention of *r* as a first member to be the special feature of Vrācaḍa

was probably present as a dialectal variety, because in a number of words like *tūrya*, *dhairya* etc. we find that the Prakrits show a development into *tūra dhīra*, which is distinct from the usual treatment into *-jja-* due to ordinary assimilation. That both the types are found side by side must be explained on the basis of dialectal mixture.

In Sanskrit the lingual *r* exerted the influence of cerebralisation on the following *n* only. But in the Middle Indo-Aryan, all the dental plosives came under this influence. A number of dialects thus show assimilation with cerebralisation of the dentals in such a situation. When the sound *r* is not assimilated, a general tendency to avoid two retroflex sounds in close succession prevents the cerebralisation of the following dental.

As compared to the unassimilated groups of plosive + *r*, clusters of this type (i.e. *r* + plosive) are rare. While assimilation in such cases is general and frequent in the Aśokan inscriptions, we find cases where the group is preserved. But the tendency of writing the *r* either with the following or preceding consonant makes it hard to decide the exact scope of this preservation. S. M. have *athra* (*artha*), *athraye* M., *vagra* (*varga*) S. M., *svagra* (*svarga*) S. M. and even a form like *kiṭri* (*kirti*) S. Except in the last example, we do not find the preservation of groups with *r* going along with the process of cerebralisation. While the Girnar version keeps the dentals the other versions show cerebral sound with assimilation, *aṭha* (*artha*), K.D.J. *atha* S. *aṭhaye* (*arthaya*) S. *athāya* G., *anuvaṭatu* M. *anuvatisare* G. Even here the evidence is not quite conclusive to establish a dialectal difference.

The Kharoṣṭhi Dhammapada is quite consistent in preserving groups of *r* + plosive as can be seen from examples like *nābhinarḍati*, *drumediṇo*, *pravataṭho*, *vardhati*, *kirti* etc. In the Niya inscriptions the preservation of *r* + plosive (mostly dental) is the rule, while assimilation with or without cerebralisation is exceptional: *anuvartiyati*, *visarjeya*, *kartavo*, *kirti*, *vardhati*, *artha*, *ardha*. They also preserve groups of *l* + plosive as in *alpa*, *silpigam*.

These groups are not retained in Pāli and the other Prakrits, and cerebralisation in them, though on a much wider scale, is neither consistent nor uniform. The preservation of a form like *sarpi* in the Vṛācaḍa Ap. according to Kramadīśvara remains enigmatic and without further corroboration.

such clusters as indicative of the older stage of Ap. called by him as *Vrācaḍa*, and the later phase called *Nāgara* is considered as favouring assimilation like the other Prakrits. Others consider this difference as merely dialectal and not chronological.

The difference between the assimilated groups and the unassimilated forms can be both dialectal and chronological. But what is important is to note that these two go back to a difference of pronunciation in the original groups themselves, which must have been a dialectal difference. Clusters with *r* as the second member, as against clusters with *r* as the first member, showed a two-fold pronunciation, one with the plosive as geminated or lengthened and the other without such length or gemination of the plosive. While the first type naturally developed into the assimilated groups, the latter type continued to preserve it over a longer stretch of time, particularly in the Ap. dialects.

The groups of liquids followed by the stops offer problems of a different nature. According to the rules of the *Prātiśākhya*s, the following plosive is doubled and such a writing is constantly followed in the fragments of *Aśvaghōṣa*'s dramas found at Turfan. The syllabic division was usually in the middle of the lengthened stop which was thus a truly geminated plosive. Thus a word like *varga* was pronounced as *varg/ga* and very soon the assimilated stop alone remained as essential for the syllabic structure of the word. But the doubling was optional, as thought by *Pāṇini*, which suggests a different type of pronunciation. In such a case, the syllabic division could have been something like *var/ga*.

The exact nature of the *r*-sound was also a matter of uncertainty. According to the *Rk-Prātiśākhya* it was found at the root of teeth or according to some others at the teeth ridge. The *Vājasaneyi* and *Atharvaveda Prātiśākhya*s tell us that it was formed at the root of the teeth or at a point very close to it. But the *Pāṇiniyaśikṣā* calls *r* a cerebral sound. There was thus a difference of articulation involved in the pronunciation of *r*, some pronouncing it as a dental or alveolar sound, others as a retroflex sound. It is but natural to suppose that this distinction is reflected in the two-fold treatment of groups with *r* as the first member, where we find the following sound either remaining dental or getting retroflexed.

A view which the *Prātiśākhya*s do not admit pertains to the lengthening of the *r*-sound. But in a group like *-ry-* some such lengthening (which would be phonetically a sound of more taps)

PHONOLOGIES OF THE NEW INDO-ARYAN LANGUAGES

THE New Indo-Aryan Languages cover the whole of Northern India, parts of the North-Western regions, the Deccan and Ceylon. They naturally admit of a ready geographical distribution. Their relations with the various Middle Indo-Aryan dialects, however, are not easy to settle, nor can we group them into cognate sub-groups with equal ease. Most of them date from a period which is nearly the same for all, though the first available documents in them belong to different centuries between the tenth and the 16th centuries A.D. while many have no written literature at all. Having contiguous areas to cover, there are naturally many border dialects like Bhojapuri, Kacchi etc. the affinities of which are bound to remain somewhat undecided. Some of the languages of the NIA period form distinct groups either on account of isolation, separation or other historical incidents. Thus Sinhalese was separated from the main body of the Indo-Aryan speakers very early and is kept apart by the large block of Dravidian languages. It follows its individual line of development over a long period of time and naturally shows many peculiar features. The Dard languages, including the Kafir dialects, the Khowar of Chitral, the Kohistani dialects and the Shina group are found to occupy the area in the extreme north-west and may owe their peculiarities either to an independent origin on par with the Indian and Iranian branches as was believed by GRIERSON or may be the result of a strong Iranian influence exerted on them at a later stage as is thought more probable by MORGENSTIERNE and others. From among them only Kashmiri was brought under the influence of Indo-Aryan civilisation and shows a well-developed literature. On account of their nomadic life, another dialect of the Midland or of the North West assumed different forms in different places which are called the Gypsy dialects (Romani).

The Indo-Aryan languages proper are usually grouped into an inner and an outer band with a few intermediate languages, a classification which is much disputed and to which new support is being sought in the treatment of the aspirates in the different New Indo-Aryan languages. It is, however, thought safer to follow a much more limited type of classification based on both the geographical spread and historical considerations of their origin. According to this scheme, to the North West are located Lahnda and Sindhi, to the south we find Marathi and Konkani, to the centre belong Panjabi, Rajasthani,

This partial study of the process of assimilation in the middle Indo-Aryan dialects reveals the extreme complexity of such phonetic changes. A difference in pronunciation in the basic form in the earlier stage revealing a dialectal tendency, a dialectal variation in the Middle Indo-Aryan period itself, mixture of forms belonging to different dialects, regional tendencies, and the difference between the spoken form and the literary tradition, all contribute to make the picture what it is in its complexity and the real problem of MIA linguistics is to disentangle all these features as far as evidence permits us to do. But one thing becomes evident. The syllabic structure of the word is the essential nature of the middle Indo-Aryan speeches and most of the changes, if not all, which are found in the phonology of these dialects, stem from the basic attitude that everything else is subordinate to the syllabic structure of a word and is of a secondary value.

VI

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Gujarati and Western Hindi, to the east of this group are found the dialects of Eastern Hindi, to the north the Pahāri group and further to the east belong the Bihar dialects and Oriya, Bengali and Assamese.

The probable time of the formation of the NIA languages and the general line of development followed by most of them are nearly the same for all of them with only minor variations. With lack of contact or early separation the development shows a rapid change or individual peculiarities. In case of Sinhalese, for instance, early migration shows some peculiar and rapid developments. The earlier form of it between 2 C. BC. to 4 C. AD. usually called the Sinhalese Prakrit shows such features as a regular deaspiration (thera > tera) a change of *s* to *h* (posatha > pohata), and *p* becoming *v* (vāpi > vavi). Proto-Sinhalese between 4th C. AD to 8 C. AD. adds to these changes the loss of dental and velar stops between vowels (nigama > niyama ; pabbata > vavaya) shortening of all original long vowels, simplification of conjuncts and some peculiar vowel changes like phāṇita to peṇi and dadhi to dī or madhu to mū. Modern Sinhalese can be dated from the 8th century AD. and works in the language can be had from the 9th century. A work on rhetoric called Siyabasa-lakara is attributed to king Sena I (AD. 831-AD 851), while the commentary on the Dhammapadaṭṭhakathā called Dahampiyā-Aṭuvā-Gāṭapadaya of king Abhā-Salamevana-Kasub belongs to the beginning of the 10th century. The famous grammar Sidat-sangarāva belongs to the middle of the 13th century, by the end of which period the language has assumed its present form. The most characteristic changes in the language are, the development of *c* to *s* (cattaro > satara), *j* to *d* (jāta > dā), *ṭ* to *ḷ* (paṭi + piḷi), development of two vowels ā and ā̃, the so-called half-nasals which are nasalized vowels, and later on the change of *s* to *h* and loss of original *h* (saṇḍa > haṇḍa).

Another Indo-Aryan dialect which migrated outside India and spread over the whole of Europe is Romani, the language of the Gypsies. TURNER believes that it was a dialect of Midland group, which migrated to the North-west very early and then left India sometime before the 9th century AD on its eventful journey over Western Asia, Europe and even America. Naturally it has split into dialects, the main groups of which are the Asiatic, the Armenian, and the European. The general development of these dialects is along the lines of the Indo-Aryan group in India proper. The Skt. diphthongs *ai* and *au* become *e* and *o* (tel < taila, mol < maulyam), intervocalic consonants are weakened and consonant clusters are assimilated. The peculiar developments due to the early separation are the changes of Skt. voiced aspirates into voiced stops or voiceless aspirates according to the dialects, the change of *kh* into a spirant *x*, the development of dentals into *l* or *r* and of retroflex into *ṛ* and the preservation of clusters with *r* as the second member.

The earliest literary monuments of the NIA languages belong to a period which is nearly contemporary. In Marathi we have a number of inscriptions beginning with the 10th century and very soon we get the works written by the Mahānubhāva writers followed by the famous works of Jñāneśvara. The Vivekasindhu of Mukundarāja is said to be older but its language appears to have undergone modernisation. The writings in old Gujarati show a greater continuity and we have to follow the development of this language from the Bharateśvara-Bāḥubali Rāsa of Śālibhadra in the 12th century onwards through a number of Jain works upto the famous Kanhaḍadeprabandha of Padmanābha in the middle of the 15th century. The poems of Pharida Śakarganj are said to belong to the 12th century, though they are now found in the oldest available Panjabi work the Granthsaheb of the Sikhs. The oldest Kashmiri works range from the 13th c. to the 15th c. and include works like Mahāyānaprakāśa of Śitikanṭha, the Lallāvākkyāni, the Bānāsūravadhā of Mahāvātāra and others following him. Of Old Bengali we have the Cariyāgītis dated from 1050 AD. to 1200 AD. and regarded as written in an eastern language yet not differentiated enough to be called either Bengali or Maithili. To Maithili proper belongs the Varṇaratnākara of Jyotirīśvara Ṭhakura and later the poems of Vidyāpati. The Assamese works begin by the end of the 13th century and include such poets as Hemasarasvatī, Hariharavipra, Mādhavakandali, Śaṅkara-deva, Mādhavadeva and many others. Hindi works begin at the same time and by about the 16th cent. the medieval period of the NIA literature is well under way.

We may now review in brief the phonological systems of a few typical New Indo-Aryan languages. One of the most curious is the one offered by the eastern-most NIA language, Assamese. It is usual to derive it from one form of the Māgadha Apabhraṁśa, with Bengali and Oriya as its colateral branches. Dr. S. K. CHATTERJI suggested a four-fold division of this type of Ap. into a dialect which gave rise to the form of Standard Bengali and Oriya, a dialect at the basis of North Central Bengali, a dialect which gave rise to Assamese and dialects of North Bengal, and a dialect at the basis of the dialects of East Bengal. Assamese itself falls into two dialect groups, one current in the east spoken from Sadiya the eastern-most frontier down to Gauhati, centred round Sibsagar the ancient Ahom capital, which gave rise to the literary standard and the western group, containing the dialects of Kamrup and Goalpara.

The phonemic system of the standard Assamese dialect shows the following vowel phonemes :

i	u
e	o
ɛ	ɔ
a	ɐ

Nasalisation in the vowels is significant, but length is determined by the position of the vowel in the word. Monosyllabic words ending in a vowel show a long vowel as in [lo:] 'iron' [ga:] 'body' or [mã:] 'mother'. They are longer in open syllables while short in closed syllables. Hence short and long vowels do not contrast and length is phonemically insignificant.

Vowels show a nasalised allophone in contact with a nasal consonant [mãnũh] 'man'. When followed by clusters with *y* they show a palatal glide, and a centralised form when they follow a cluster of the type *Cr*-. Vowels show a marked influence of the height of the vowel of the following syllable, being lowered or raised according as the following vowel is lower or higher; this effect is seen most clearly in case of the low vowel [ɐ].

The distribution of the vowels also shows some marked limitations. *i*, *e*, *a*, *ɔ* and *u* occur in all environments. But *ɛ*, *ɐ* and *o* show some limitations; *ɛ* occurs only in closed syllables/tel/ 'oil', or in open syllables when the next syllable contains the vowels *e*, *ɛ*, *a*, *ɐ*, *ɔ* or *o*. With the mid-vowels like *e*, *ɔ* and *o* in the next syllable *ɛ* shows a variation with *e*. *ɐ* when followed by *i* and *u* in the next syllable with a consonant other than a nasal intervening shows a free variation with *ɔ*. *o* does not occur in an open syllable with *u* following in the next syllable. If the vowel of the next syllable is *i*, it varies freely with *u* as in/gopi~gupi/.

The consonant system of Assamese is as follows :

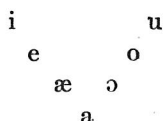
p	t	k	
ph	th	kh	
b	d	g	
bh	dh	gh	
	s	x	
	z		h
m	n	ɳ	
	l		
	r		
w		y	

The most striking feature of this system is lack of contrast between the dentals and retroflex sounds which is found in most of the Indian languages. In place of it Assamese has a single alveolar series, though the writing makes use of both the dental and retroflex symbols, following the Sanskrit and Pan-Indian tradition. Equally conspicuous is the absence of the palatal affricate series in the system in place of which it shows [s] and [z] sounds often written as c, ch, and j, jh.

Initial consonants are generally pronounced as fortis, and when followed by *y* or *r* many of them get half-long allophones. Aspirates like *ph* and *bh* when final are pronounced as fricatives [ɸ] and [β]. /x/ has a palatal allophone before *i*. As regards the distribution of the consonants we may note that only *ñ*, *w* and *y* do not occur initially, *p*, *t*, *k*, *b*, *d*, *g*, *bh*, *dh*, *gh*, *kh*, *m*, *n*, *s*, *z*, *h* occur initially before consonants. All occur medially and finally after vowels. *p*, *t*, *d*, *dh*, *s*, *z*, *h*, occur finally after consonants which are sonorants.

Better analysed and more typical of the New Indo-Aryan languages is the phonology of Bengali. The standard language is based on the central dialect spoken round about Calcutta and shows a literary form called *sādhū bhāṣā* and a colloquial form called the *calit bhāṣā*. The second is rightly taken as the basis of the phonemic analysis.

The vowel phonemes of Bengali can be represented as follows :



The front vowels and *a* are unrounded and the back vowels are moderately rounded. Vowel length plays no distinctive part in the system of the language. All vowels are fairly long when they constitute the single vowel in a microsegment. Though Bengali orthography distinguishes between a short and a long *i* and a short and a long *u* there is no such distinction in the pronunciation and there is no contrast between them. The mid and low-mid back vowels *o* and *ɔ* often vary with each other and in some cases a vowel of a mid quality *ò* is used for both, which thus becomes a marginal phoneme.

Nasality is distinctive and all oral vowels have their nasal counterpart, though a nasalized *ĩ* is extremely rare. The nasalised vowels are slightly higher than the oral ones. This contrast is neutralised in the vicinity of a nasal consonant.

The allophones of the vowels are not very pronounced. /i/ has a more centralised sound after t , d and a retroflexed one before a retroflex consonant; and the same is true of /u/.

In addition to these vowel phonemes, it is convenient to admit four semi-vowels of high and high-mid position i , u , e , and o to take note of a number of contrasts between two vowels forming two syllables and a vowel followed by one of these semi-vowels forming falling diphthongs. This will explain contrasts like cae 'he wants' and cae 'in tea' or jai 'I go' and jai 'the very sister-in-law', and many others. Bengali shows a large number of vowel-clusters of all types.

The consonantal phonemes of Bengali can be tabulated as follows :

p	t	t	c	k
ph	th	th	ch	kh
b	d	d	j	g
bh	dh	dh	jh	gh
m	n			n
r	r			
l		s	h	

This system consists of twenty-five stops which include four affricates, three nasals, three liquids, one sibilant and an h. The stops form a system of 4 by 5 with distinctive features like voice, voicelessness, aspiration and lack of aspiration. The significant places of articulation are labial, dental, retroflex, palatal and velar. The stops are articulated weakly and the bilabial aspirates ph and bh often become regular fricatives like ϕ and β . /n/ has a palatal allophone when followed by the palatal consonants and a retroflex one before retroflex stops. / n / does not occur initially. / r / is mainly in complementary distribution with / d /, but contrasts in a few borrowed items like English road. The sibilant is normally a palatal sound / s / but shows a dental allophone in contact with t, th r, and n. Words borrowed from Hindustani and English have introduced the dental s in other places and hence a phonemic status may be given to it. Aspiration, whether h or in the aspirated stops, is stable only in the initial position of the words or morphemes, and it tends to disappear both in the medial and final positions. /r/ is a post-dental trill or a flap. It is very short finally and is often a mere fricative sound.

All consonants occur as geminates except n , h, r and r . There is a general tendency to make the whole cluster as either voiced or unvoiced, but otherwise stops of all position can form groups. There are no final consonant-clusters and only a few clusters occur initially,

mostly stop + r or s + stop. Medial clusters of two consonants are frequent and show a great variety. Bengali stress is mostly demarcative and junctures of three types have to be admitted to account for a number of features of the phonology. Intonation patterns are varied but appear to be the same as in other Indo-Aryan languages.

The third language of the Eastern group is Oriya. Its vowel system gives the following appearance :

i	u
e	o
ə	
a	

Nasalisation is phonemic in vowels and we get minimal pairs like /pəhəɾə/ 'a watch of the day' and /pəhəɾə/ 'sweep' (2 sg.) or /ga/ 'you sing' and /gã/ 'a village'. What is striking is that this contrast is also valid after a nasal consonant which is not true of either Assamese or Bengali. Thus /na/ 'boat' differs from /nã/ 'name' and /noi/ 'river' is different from /nõ/ 'having bent'.

There is a real problem in Oriya about the phonemic status of the vowel length. In most cases the length of the vowel depends upon the length of the word. They are long in monosyllabic words. In polysyllabic words, if one vowel is long, the others are usually short, but in some cases it is not possible to predict them. A few minimal pairs can also be found : /kəɳə/ 'corner', but /kə:ɳə/ 'what'. /pheɾe/ 'he returns', but /phe:re/ 'again', on it is based even a grammatical difference like /bəse/ 'he sits' and /bə:se/ 'you sit' or /kore/ 'he does' and /kə:re/ 'you do'. But even then the contrast is limited.

If we now look into the clusters of vowels which Oriya permits, we get the following picture :

	ə	a	i	e	o	u
ə	x		ɔi	ɔi		ɔu
a	aɔ	x	aɪ	ae	ao	au
i	iɔ	ia	x	ie	io	iu
e		ea	ei	x	io	iu
o			oi	oe	x	ou
u	uɔ	ua	ui	ue		x

The conclusions that can be drawn from this chart are obvious enough. The systematic gaps of clusters of similar vowels is due to the presence of long vowels which contrast with short vowels and one can regard the few cases of long vowels as distinct from the short ones as clusters of similar vowels. Thus /kə:nə/ 'what' can be regarded as /kəənə/ and /phe:re/ 'again' as /pheere/. In many cases, this is supported by the history of the words. Thus length of vowels in Oriya proves to be not phonemically significant which must have been a case in a slightly earlier stage of the language, and with the contraction of two similar vowels new length with phonemic significance has arisen in the language, naturally in a few cases only.

The allophones of the vowels are few but clear. /i/ is very short [ĩ] before a cluster of a nasal and a stop and has a retracted articulation before the retroflex lateral ɭ. /ə/ is slightly rounded before the retroflex consonants and low vowels in the next syllables. In the middle syllable of a trisyllabic word, [ə] becomes a regular central vowel [ə.] /səhəjə/ 'easy' [səhəjə]. /e/ is lowered when the next syllable has the vowels e, ə, or a and is centralised before a retroflex consonant or lateral. /u/ has a lowered variety before a retroflex sound like ɳ or ɭ and is very short [ũ] in the middle syllable of a polysyllabic word /kukuro/ 'dog' /purusə/ 'man' etc.

The consonantal system of Oriya may be represented as follows :

k	č	ʈ	t	p
kh	čh	ʈh	th	ph
g	ǰ	ɖ	d	b
gh	ǰh	ɖh	dh	bh
ɳ		ɳ	n	m
			r	
		ɭ	l	
h	y		s	w

/n/ has an allophone [ɳ] before the palatal affricates which are here considered as stops. /n/ has a nasalised flap articulation between vowels, and /ɖ/ has a retroflex flap allophone intervocally. Initially and after short vowels, the stops have a fortis articulation. No contrast between a single stop and a geminated one is noted. Except ɳ no consonant occurs at the end of a word.

The problems of Hindi phonology lie in the complex linguistic situation of the area where Hindi is the accepted literary language and the language of education. This is the situation in the area covered by the states of Rajasthan, Delhi, Himachal Pradesh, Uttar Pradesh,

Bihar and parts of Panjab, the largest linguistic area in the whole of India. The spoken languages in this vast area are naturally fairly distinct from each other and mutually unintelligible though the local dialects form a continuum from one point of the area to the other and shade into each other without a clear break. The usually accepted description of this situation is to be found in the scheme proposed by GRIERSON for the linguistic survey of India which is generally followed. He divided the whole area into such chief linguistic groups as Rajasthan, Western Hindi, Eastern Hindi, Bihari, and Pahari. These are not languages in the usually accepted sense, but names which cover a number of clearly related dialects or languages, each having its own literature and in many cases a literary tradition of long standing. Western Hindi includes literary Hindi and Urdu, such dialects as Bangru, Braj Bhaṣa, Kanauji and Bundeli. The Rajasthan dialects include Mewari to the north, Malvi to the south-east, Marwari to the west and Jaipuri to the east. The Pahari languages are divided into an eastern group including Nepali, a central group including Kumaoni and Garhwali, and a western group of a number of small dialects. Eastern Hindi is made to cover languages like Awadhi, Bagheli and Chattisgarhi. The Bihari group is made up of Bhojapuri, Magahi and Maithili. The speakers of such diverse languages, when they make use of the standard language called Hindi, naturally show differences among themselves, and a synchronic picture to cover such differences becomes difficult. In addition, the standard language shows two distinct styles called High Hindi and Urdu, and the spoken colloquial standard stands somewhere mid-way between the two. So distinctions in sound and phonemic contrasts change from speaker to speaker according to the education and inclinations of the speaker.

A more recent attempt handles the complex situation in a slightly different manner. The total range of speech varieties including rural and urban forms, educated and uneducated types and speakers of higher and lower classes of society is divided into three strata, each superimposed upon the other. At the bottom are the village dialects spoken locally changing from village to village and from one caste group to other but forming a kind of continuum of mutually intelligible types when they are sufficiently close to each other geographically.

Superimposed on this stratum is the layer of regional languages, which are understood over a large area and which are called by such local names as Awadhi, Bhojapuri or Marwari. Many of them have no close connection with the standard Hindi. They are the forms of

speech used for intercommunication in the different regions and possess literature of their own of earlier days.

The third stratum which is superimposed on these regional languages is called Hindi, or Hindustani or even Hindi-Urdu. This speech is the native speech of a few people mostly of urban residence. But it is the acknowledged literary standard and is also the standard colloquial over this vast area and the prestige language. It is the language which is taught in the schools, is used in administration and is spoken on all formal occasions. Even this standard shows some variety due to the training and literary inclinations of the speakers, which can be said to tend towards two ideal norms called High Hindi and Urdu, a distinction which is most marked in literary styles and even the scripts used for them. The spoken language naturally stands midway between the two and never reaches the ideal standards, showing a greater uniformity throughout the area.

The colloquial standard shows the phonological system of the following type which may be considered as a kind of common core for the whole Hindi speaking area. Each different style will then show additional features of both phonological contrasts and grammatical types.

The vowel system of such a common core may be represented as follows :

short vowels			long vowels		
i		u	i:		u:
	a		e:		o:
			ε:		ɔ:
			a:		

In this system length is phonemic for the three basic vowels /i/ /u/ and /a/ but not so in case of /e/ and /o/. /ε:/ and /ɔ:/ always occur as long ones, while the length of /e/ and /o/ is determined by their place in the word. Nasalization is phonemic and all vowels occur with the nasal phoneme to produce contrast. Thus /hε/ means 'he is' while /hẽ/ means 'they are'.

As regards the allophones of vowels, we may note that the short vowels /i/ and /u/ are slightly lower than the corresponding long vowels /i:/ and /u:/ and the short /a/ is higher than the long /a:/, /e:/ and /o:/ are shorter when followed by h in a polysyllabic word. [čehra.] [kohra.] /a/ has an allophone [ε] when preceded or followed by h [kɛhna.]

In many local forms of speech the contrast between short and long /i/ and /u/ is not present finally, while in the standard colloquial the long /i:/ and /u:/ show a half-long vowel [i.] and [u.] in that position, making a contrast like /ki:/ and /ki/. The /ɛ:/ and /ɔ:/ of the standard colloquial tend to become diphthongs like [ɛe] and [ɔo] as we proceed more to the eastern side, and finally they become regular diphthongs of the type [əe] and [əo] in the Bihari area. A more Sanskritised pronunciation adds a new vowel like [ɪ̃] after r in many words, and English borrowings have added two vowel phonemes like [ɛ] and [a] in words like *check* and *ball*.

The common core of the consonantal system may be tabulated as follows :

k	č	ṭ	t	p
kh	čh	ṭh	th	ph
g	ǰ	ḍ	d	b
gh	ǰh	ḍh	dh	bh
h	ś		s	
	y			v
			n	m
			r	l

The most important allophones are : /ḍ/ and /ḍh/ show a flapped pronunciation between vowels [ɪ̃] and [ɪ̃h] /r/ has a more fricative form [ɾ̃] when a retroflex follows it [ga:ɾ̃ḍ]. /v/ shows a pure bilabial sound [w] when back vowels follow it. /m/ has a labiodental value [ṁ] before labiodental sounds, /n/ has a velar articulation [ṇ] before velar stops, a post dental sound [ɳ] before dentals, a more retroflexed value [ɳ̠] before retroflex stops, and an alveolar sound [n] between vowels.

A more Sanskritised pronunciation adds a retroflex sibilant ś as a distinct phoneme, and ṇ gets a phonemic status due to such words as [ka:ɾɳ̠] taken from Sanskrit directly. English borrowals like *soḍa* and *roḍ* make [ḍ] and [ɾ] distinct phonemes, and a more Persianised pronunciation adds phones like /f/ /x/ /z/ and /ɣ/ and very rarely a /k/.

Next we may look into the phonology of the westernmost language with a good deal of individuality. Sindhi is divided into five or six dialects, if Kacchi is regarded as its dialect. The others are Siraiki spoken in the northern region of Sindha, Viccholi spoken in the centre and the basis of the standard literary form of the language, Lāri, found in the southern region and Thari spoken in the Sindha border adjoining the Rajasthan area. It is only recently that Devanagari script is being used to write the language in the Indian Union.

The vowel phonemes of Sindhi can be divided into two classes :

short vowels			long vowels		
ɪ	ʊ		ɪ	u	
			e	o	
ə			ɛ	ɔ	
			a		

Phonetically /ɔ/ is a diphthong something like [ɔɔ]. Distributionally it occurs in the same positions as simple vowels and hence it is better to consider it as a simple long vowel in the phonology of the language. /ɛ/ also was a diphthong in the earlier period of the language, but is now pronounced as a simple vowel.

In the short vowels we have a contrast between front, back and central. In the long vowel system we have a four-fold contrast in the tongue-height and a two-fold contrast between front and back except in the most open vowel /a/.

When the three short vowels occur at the end of words of more than one syllable they are centralised and weakly voiced and /ə/ is raised [ə̃]. When ɪ is preceded by l, z, ʃ it is slightly centralised and is lowered [ɪ̃] when preceded by h. The long vowels are longer when they are followed by the vowels of the 1st group in the next syllable. Nasalisation is phonemic and a nasal vowel contrasts with a non-nasal vowel as also with a nasal consonant : /ā̃dhi/ 'restlessness', /andhi/ 'storm' and /adhi/ 'half a rupee'. The nasalisation covers a single vowel or a sequence of vowels even when they are separated by /y v/ and /h/ or their clusters /hy, vh/. Hence it is best regarded as a suprasegmental phoneme [hũ : ẽ] 'she' [kṣṽṽl] 'lotus'. It is also worth noting that a nasal and a non-nasal vowel contrast after a nasal consonant like n : /nai/ 'hair-dresser', /naĩ/ 'nineth' (Fem).

Sindhi is probably the richest Indo-Aryan language in the consonantal phonemes. The standard dialect has the following consonants

p	t	ʈ	č	k
ph	th	ṭh	čh	kh
b	d	ḍ	j	g
bh	dh	ḍh	jh	gh
ḃ		ḍ̣	ḵ	ḡ
m	n	ṇ	ṁ	ṅ
f	s		š	x
	z			γ
	l	r		
w			y	h

The most striking feature of this system is the presence of the implosive voiced stops which are complete except a dental voiced implosive. Secondly all the nasals contrast and hence are phonemic, and so do /r/ and /ɾ/ /kh/ and /x/ /gh/ and /ɣ/. Between vowels, after a short vowel, the stops, fricatives and nasals show appreciable length and tenseness. Gemination of the same consonant is not phonemic in Sindhi, but there occur a few geminate clusters across the morpheme boundary, where the total length of the cluster is much greater than intervocalic long stops. All voiceless stops and fricatives are always tense. Otherwise the consonantal phonemes show no significant allophones.

The vowel system of Gujarati may be represented as follows :

i		u
e	ə	o
ɛ	a	ɔ

It shows a three-fold contrast in place of articulation as front, back and central, and a four-fold contrast in the height of the tongue, though it is just possible to make it simply a three-fold distinction because, not more than three degrees are distinguished at any one of the places of articulation.

Vowel length is not phonemic in Gujarati. Vowels like /i/ and /u/ occur both short and long, but the length is determinable on the basis of the structure of the word. In words of a single syllable these vowels are long. They are also long finally. Otherwise they are short. The contrast between /e/ and /ɛ/ and /o/ and /ɔ/ is limited in extent and is not found before nasal. There are no separate symbols for the open vowels in the script and historically they are the result of two vowels combining into one. Nasalisation in the vowels is phonemic but nasalised /ẽ/ and /õ/ are not met with.

The consonantal phonemes of standard Gujarati are :

p	t	ʈ	c	k
b	d	ɖ	j	g
bh	dh	ɢh	jh	gh
ph	th	ʈh	ch	kh
	s		ś	
	l	ɭ		
	r			
m	n	ɳ		
w			y	h

The nasal /n/ has a velar allophone [ŋ] before velar stops and a palatal allophone [ɲ] before the palatal stops. The other three contrast in medial and final positions. /d/ has a flapped allophone [ɾ] between vowels and finally, but in some dialects it has become a separate phoneme. The vowels in the proximity of /h/ are murmured vowels and it is possible to set up a set of such murmured vowels in contrast with the ordinary voiced vowels, or following the graphic mode we may interpret the murmur as a segmental /h/ either preceding or following the vowel. In addition a phoneme /z/ occurs in words of Perso-Arabic origin and is of limited distribution. /ʃ/ has a retroflex allophone [ʂ] before a retroflex consonant.

The standard Panjabi dialect shows the following vowel system, which can be grouped into short and long vowels, as is done in case of Hindi and Sindhi, with which it resembles most.

short vowels			long vowels		
ɪ	ʊ	i	e	o	u
ə			ɛ	ɔ	
			a		

Though length is phonemic in vowels, short and long vowels do not contrast in all positions. But what characterise the vowel phonemes of Panjabi are the tones which are significant in the language. Three tones are distinguished. The most common is a falling tone /^ˆ/, the rising tone /^ˊ/ which falls to low on the next syllable and /^ˋ/ a falling-rising tone, which shows a rise on the next syllable. The toneless syllables are also the unstressed ones. The following rising tone is the result of the loss of aspiration and voice of the preceding original voiced aspirates, and is indicated in script by writing the characters for bh, dh, gh etc.

The consonantal system is as follows :

p	t	ʈ	c	k
b	d	ɖ	j	g
ph	th	ʈh	ch	kh
m	n	ɳ		
	l	ɭ		
	r	ɽ		
f	s		ʃ	x
w			y	h

/n/ has a velar allophone before velar stops, /ḍ/ and /ṛ/ though distinct phonemes have only limited contrast. In place of f and x some speakers use ph and kh, thus eliminating these fricative phonemes. The absence of voiced aspiration is to be noted in the stop series.

The southern most Indo-Aryan language in India is Marathi. The language spoken round about Poona is generally taken as the standard and the literary style is based on it. Only one dialect of Marathi called Konkani shows wide deviations from the standard and hence is often claimed to be an independent language. The vowel phonemes of the standard colloquial may be represented as follows :

i	u
e ə o	
a	

Borrowings from English in the recent past have added two more vowel phonemes viz. æ and ɔ in words like /bæt/ or /bɔl/. Older borrowings from Sanskrit have added long /i:/ and /u:/ in such places of the word as to make them contrast with their short forms and make them different phonemes. Thus /ʃi.tə/ 'cold' may contrast with /ʃitə/ 'grains' and /ru.pə/. 'forms' may contrast with /rupə/ 'silver'. But this is not true of all speakers. The contrast between [pətr] 'letter' and [pətrə] 'letters' can be dealt with by phonemicizing them as /pətr/ and /pətrə/ and thus avoid length in /ə/. Only one vowel can be long in a given morpheme and the others are short. The rules, however, to predict the long vowels are in some cases more complicated, and the vowels which are naturally long like [e, o,] and [a] are shortened less than others like, [i.], [u.], and [ə.]. Mostly the vowel of the last syllable is long and other are relatively short. A careful pronunciation of some Sanskrit words has also added a central high vowel like [ɪ] in words where Śanskrit has a syllabic r or l.

It is difficult to decide the value of nasalisation in Marathi. One type of speech uses it extensively and there it is obviously phonemic, but in the speech of many speakers it is absent and non-phonemic. A contrast like /həus/ 'hobby' and /həūs/ 'swan' may be considered as giving phonemic status to nasalised vowels, but it may prove more profitable to set up a phoneme of nasalisation which will cover the nasalised forms of such semi-vowels as y, v, l etc.

The consonantal system of standard Marathi is as follows :

p	t	ṭ	c	č	k
ph	th	ṭh	ch	čh	kh
b	d	ḍ	j	ṣ	g
bh	dh	ḍh	jh	ṣh	gh
m	n	ṇ			ṇ
	r				
	l	ḷ			
	s		š		h
w			y		

Careful pronunciation of Sanskrit words has added the additional sibilant /s/ and words from Persian and English have added /f/. The most striking feature of the system is the contrast between the dental affricate series and the palatal affricates. The contrast between /ch/ and /čh/ and /jh/ and /ṣh/ is rare, while the contrast between both the series is mostly neutralised before front vowels like *i* and *e* in favour of the palatal sounds and before *u* and *o* in favour of the dental sounds. But they contrast before *ə* and *a*. No contrast is noted word-finally. Another peculiarity of Marathi is the presence of the aspirated forms of nasals *m*, *n*, *ṇ* and the lateral and semi-vowels *r*, *l*, and *v*. This may make it convenient to set up /h/ as a separate phoneme and regard aspirated stops as clusters.

/n/ has a palatal allophone before palatal fricatives and the nasal phoneme /~̃/ has nasalised allophones of *y*, *v* and *l* when they are followed by these phonemes. /ḍ/ and /ṇ/ have flapped allophones intervocally in rapid speech. Final /ph/ freely varies with [f] and /v/ has an allophone [w] before back vowels. /h/ is voiced in contact with voiced stops, and between vowels, but voiceless in contact with voiceless stops, and optionally voiceless when initial. The contrast due to the presence or absence of the aspiration is stable initially and medially, but often disappears finally. In rapid and more familiar speech medial *h* also tends to disappear.

These necessarily sketchy and imperfect analyses of the phonologies of N. Indo-Aryan language are meant to give an idea of their range and serve as a basis for historical deductions based on typological compari-

sons. Just as systematic comparison more than comparison of individual items leads to better results in reconstructions, similarly a systematic comparison leading to a closer formulation of the differences between closely related languages, should lead us to better and more reliable results about their subgroupings and consequently to the history of their successive splits. To illustrate this point of view we may take up for consideration one or two points of phonology in the NIA languages.

Vowel length will give us one such point for evaluation. It was significant in all the vowels, a, e, o in the IE period. In the I-I period, it was significant between a and ā, i and ī, u and ū and the short and long diphthongs, ai : āi, au : āu. By the time of Vedic Sanskrit, the change of the short diphthongs into long e and o made the vowel system lopsided as far as vowel length is concerned. Throughout the OIA and MIA, this situation did not materially change, and the central group of NIA languages continue to show the same situation as can be seen from the phonologies of Hindi, Panjabi and partly Sindhi. But when we go further to the east or to the south, we find that the length in these vowels slowly goes on losing its phonemic status and it has no significance either in Assamese or Bengali to the extreme east or in Gujarati or Marathi further to the south. The intermediate languages like say Bhojapuri or Oriya and a few others appear to show an intermediate stage, where the length is partly given up but partly kept, though its phonemic importance is certainly on the decrease.

A similar situation can be seen as regards the stability of the aspirates. They are firm and quite stable in the central area represented by Hindi. But as we approach the borders of the Indo-Aryan speech region we find the aspirates either losing ground or undergoing some kind of modification. Thus Assamese has completely given them up, and in Bengali and Marathi, they show a tendency to lose their value both finally and medially and remain operative only at the beginning of words. In Panjabi they undergo another type of modification, and are also lost in the Sinhalese language to the extreme south.

Large scale innovations are also to be found in the languages which are on the outskirts of the area. Thus the distinction between the dentals and retroflex sounds is lost in Assamese and the palatal series has become a dental sibilant series, the original dental sibilant *s* developing into a kind of a velar fricative. In the south, Marathi has developed a

two fold affricate series unknown to the central region and has given up nasalisation of the vowels which is so important in the other northern Indo-Aryan languages. To the west Sindhi has developed the implosive sounds which are not known to the central area and the Panjabi and other north-western dialects have developed significant tones which are equally unknown to the central region. On the whole an impression is produced that the best way to understand the interrelation of the phonologies of the NIA languages is to imagine them as having a centre in the central region from which radiations in all the directions have followed, with innovations and individualities increasing along with the distance from the centre.

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ABBREVIATIONS

Ab. Ablative	Kh. Dh. Kharoṣṭhi Dhammapada
AB. Aitareya Brāhmaṇa	L. Lat. Latin
Acc. Accusative	Loc. Locative
AMg. Ardhamāgadhī	M. Mansehra
Ap. Apabrah̥ṣa	M. Marāṭhī
As. Assamese	Mas. Masculine
Av. Avesta	MIA. Middle Indo-Aryan
AV. Atharva Veda	Mil. Milindapañho
B. Bengali	MS. Maitrāyaṇī Saṃhitā
br. Brahmagiri	Nom. Nominative
CD Complementary Distribution	NIA. New Indo-Aryan
Cl. Skt. Classical Sanskrit	Neu. Neuter
D. Dhaulī	OCS. Old Church Slavonic
Dat. Dative	OHG. Old High German
du. dual	OIA. Old Indo-Aryan
E. Environment	OP. Old Persian
Eng. English	P. Person
Fem. Feminine	plu. Plural
G. Girnar	Raj. Rajasthānī
GA. V. Gāthā Avesta	Rp. Rupanath
Gen. Genitive	Ru. Rumandei
Ger. German	RV. R̥gveda
Gr. Group.	S. Sabhazgarhi
Gr. Greek	SB. Śatapatha Brāhmaṇa
IA. Indo-Aryan	Sd. Siddapur
IE. Indo-European	sg. Singular
I-I. Indo-Iranian	Skt. Sanskrit
Ins. Instrumental	SN. Suttanipāṭa
IR. Internal Reconstruction	SV. Sāmaveda
J. Jaugad	T. Topra
Jat. Jātakas	TS. Taittirīya Saṃhitā
JB : Jaiminiya Brāhmaṇa	V. Vedic
K. Kāthaka Saṃhitā	VS. Vājasaneyi Saṃhitā
K. Kalasi	YAv. Younger Avesta.

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